Subject Handbook

Maths

Ecce Agnus Dei

Behold the Lamb of God
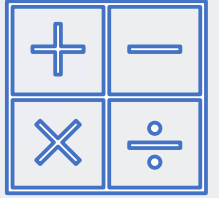
St. John the Baptist
Catholic Primary School

Our Maths Curriculum

Intent

At St John the Baptist, we take a mastery approach to the teaching and learning of mathematics. Essentially, our ethos is that all children can be successful in the study of mathematics. We do not accept that 'some children cannot do maths' or that children should be limited by prior attainment; maths is for everyone. We teach the skills to ensure our children are resilient learners who become life-long mathematicians. We aim to deliver an inspiring and engaging maths curriculum through high quality teaching.

Mathematics is a creative and highly interconnected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.
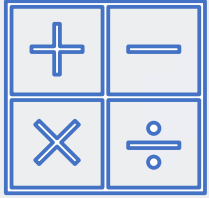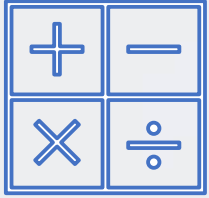
Our Maths Curriculum
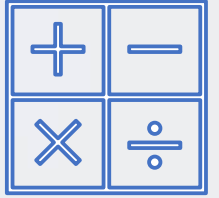
Implementation

Our EYFS at St John's provides an engaging and encouraging climate for children's early encounters with mathematics. This develops their confidence and their ability to understand and use maths and is the foundation for their future maths learning.

We are passionate about the teaching of early mathematics. We actively introduce mathematical concepts, methods, and language through a variety of engaging and stimulating practical experiences, both within the classroom and in the outside environment. We guide children to see connections of ideas within maths as well as with other subjects, developing their mathematical knowledge throughout the day and across the curriculum. We encourage children to communicate, explaining their thinking as they interact with maths in a deep and sustained way.

We ensure that children have sufficient practice to be confident in using and understanding numbers which provides a strong basis for more complex learning later on. Focus is placed on the use of concrete resources to develop deep structural knowledge and the ability to make connections, with the aim of ensuring that what is learnt is sustained over time.

Our Maths Curriculum
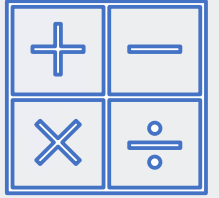
Implementation

We are committed to ensuring that all children are mathematically proficient and confident in the use of maths in their everyday lives. To achieve this, we teach for maths mastery designed to ensure all children develop a deep and sustainable understanding of age-appropriate mathematical concepts, which can be built upon in the future. We believe that every child can achieve and encourage the growth mindset 'can do' attitude. Pupils learn to think mathematically to find patterns, connections and relationships between different concepts.

Building on relevant educational research, our maths curriculum has been responsive to the concept of retrieval practice and we understand that children need regular opportunities to revisit prior learning in order to commit mathematical understanding to long term memory.

We teach maths using the White Rose Maths planning. It is based on a small-steps approach, which means the concepts are broken down to enable the children to acquire a deep, long-term, secure and adaptable understanding. It has been designed to support and challenge all pupils and is built on the belief that everyone can learn maths successfully, by building number fluency, confidence and understanding, step by step. By taking a Concrete, Pictorial, Abstract (CPA) approach, WRM allows children to tackle concepts in a tangible and accessible way. All ideas are built on previous knowledge and pupils have lots of opportunity to recognise relationships between topics.
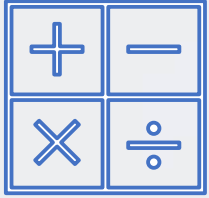
Fluency comes from deep knowledge and practise. At early stages, explicit teaching of multiplication tables is important in the journey towards fluency and contributes to quick and efficient mental calculation. We teach multiplication both through progressive teaching sequences and through multiplication chanting and recall of the times tables appropriate for each year group.

At St John's we teach multiplication tables in the following year groups so that children are proficient in the rapid recall of all multiplication tables up to 12×12 by the end of Year 4
– Year 2: 2s, 5s and 10s
– Year 3: 3s, 4s and 8s
– Year 4: 6s, 7s, 9s, 11s and 12s.

We also use Times Tables Rockstars as a tool to help pupils develop fluency in number facts and multiplication tables in school and at home.
Each half term children are given Key Instant Recall Facts (KIRFs) to practise and learn at home. We expect the majority of the children within a year group to be working towards these targets. It is important that children know these thoroughly and are able to recall the facts instantly for their year group. By helping to develop these skills, the children will be more able to access other areas of the maths curriculum such as calculation methods, problem solving and reasoning.

Our Maths Curriculum

Impact

When we plan our lessons and sequences of lessons, we structure the learning so that all pupils work through new content together as a whole group. Although we do not differentiate the learning task by reducing the level of difficulty for certain groups, the questioning and scaffolding that individual children receive in class will differ.

Teachers allow time for children to fully understand, explore and apply ideas, rather than accelerate through new topics. Pupils' difficulties and misconceptions are identified through immediate formative assessment and addressed with rapid intervention. This approach enables pupils to truly grasp a concept.

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Curriculum Rationale
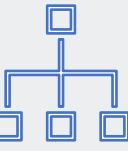
Mathematics is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

At St John the Baptist, we take a mastery approach to the teaching and learning of mathematics. Essentially, our ethos is that all children can be successful in the study of mathematics. We do not accept that 'some children cannot do maths' or that children should be limited by prior attainment; maths is for everyone. We teach the skills to ensure our children are resilient learners who become life-long mathematicians. We aim to deliver an inspiring and engaging maths curriculum through high quality teaching. In order to improve our mastery approach and improve the quality of our maths teaching, we base our teaching on the White Rose Maths curriculum plans.

The key features of a mastery approach:

The class work together on the same topic

The emphasis is on keeping the class together until specific concepts or skills are mastered and then moving on together. This does **not** mean that some children will be left behind or others not challenged. Differentiation is now achieved through and deeper understanding, as explained below.

Speedy teacher intervention to prevent gaps

Those children that have not met the expected outcomes or have gaps in their understanding, will be helped by receiving short, immediate extra time on maths, during the lesson or later in the day. This is a positive opportunity to consolidate their understanding.

Challenge is provided by going deeper not accelerating

For those children that have mastered the skill, concept or procedure they will be presented with higher order thinking activities, rather than accelerating through the curriculum.

Focused, rigorous and thorough teaching

Within Mastery, the idea is to focus on one small step at a time in a lesson, with an emphasis on the mathematical structures involved and the best way to represent these through models and images. Each small step is important as it builds towards deep understanding of a concept.

More time on teaching topics – depth and practice

The same topic is likely to have the same focus until the class has mastered the concept, skill or procedure being taught. This is particularly the case for number and calculations. Focus areas are being taught over a longer time with smaller steps of progress and time is for practice and depth, making the learning effective.

Representation and Structure
Representations such as objects and pictures are used in lessons expose the mathematical concepts being taught.

Mathematical Thinking
If taught ideas are to be understood deeply, they must not merely be passively received but must be thought about, reasoned with and discussed with others.
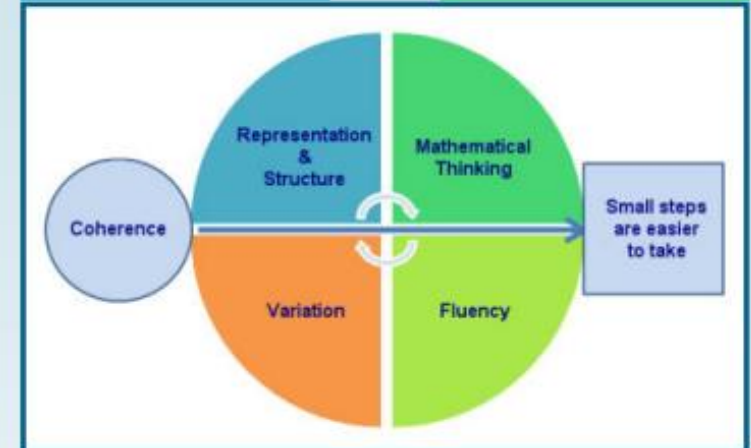
Variation
Varying the way a concept is initially presented to students, by giving examples that display a concept as well as those that don't display it. Also, carefully varying practice questions so that mechanical repetition is avoided, and thinking is encouraged.

Fluency
Quick and efficient recall of facts and procedures and the flexibility to move between different contexts and representations of mathematics.

Coherence
Connecting new ideas to concepts that have already been understood, and ensuring that, once understood and mastered, new ideas are used again in next steps of learning, all steps being small steps.

Curriculum Overview

Year 1

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12

Autumn term

Number

Place value (within 10)

Count forwards and backwards within 10 beginning with 0 or 1, or from any other number
Given a number identify 1 more or 1 less
Identify and represent numbers using concrete objects and pictorial representations
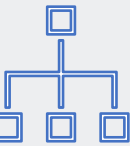Us the language of Fewer, more, same
Use language of Less than, greater than, equal to
Identify and represent numbers using a number line to 10.

VIEW

Number

Addition and subtraction (within 10)

Read, Write and interpret mathematical statements involving + - =
Represent and use number bonds and related subtraction facts within 10

VIEW

Geometry Shape — Recognise and name 2D and 3D shapes

VIEW

Consolidation

Spring term

Number

Place value (within 20)

Count forwards and backwards within 20 beginning with 0 or 1, or from any other number
Given a number identify 1 more or 1 less
Identify and represent numbers using concrete objects and pictorial representations
Identify and represent numbers using a number line to 20
Read and write numerals from 1 -20

VIEW

Number

Addition and subtraction (within 20)

Represent and use number bonds and related subtraction facts within 20
Solve one-step problems involving addition and subtraction using concrete objects and pictorial representations

VIEW

Number

Place value (within 50)

Count forwards and backwards within 50 beginning with 0 or 1, or from any other number
Given a number identify 1 more or 1 less

VIEW

Measurement

Length and height

Compare, describe and solve practical problems for length and heights

Measure and begin to record lengths and heights

VIEW

Measurement

Mass and volume

Compare, describe and solve practical problems for mass and volume

Measure and begin to record mass and volume

VIEW

Summer term

Number

Multiplication and division

Count in multiples of 2, 5, 10

VIEW

Number

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

VIEW

Geometry Position and direction — Describe position, direction and movement including ¼ ¾ ½ turn

VIEW

Number

Place value (within 100)

Count forwards and backwards within 100 beginning with 0 or 1, or from any other number
Given a number identify 1 more or 1 less
Read and write numbers to 100

VIEW

Measurement Money — Recognise and know the value of different denominations of coins and notes

VIEW

Measurement

Time

Sequence events in chronological order.
Recognise and use language relating to dates
Tell the time to the hour and half past the hour
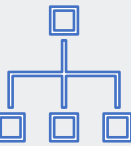
VIEW

Consolidation

Curriculum Overview

Year 2

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12

Autumn term

Number

Place value
- count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and 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 numerals and in words
- use place value and number facts to solve problems

VIEW

Number

Addition and subtraction
- 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
- 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
- show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot
- recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.

VIEW

Geometry

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 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.

VIEW

Spring term

Measurement

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

VIEW

Number

Multiplication and division
- 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 and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs
- show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot
- solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

VIEW

Measurement

Length and height
- choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels
- compare and order lengths, mass, volume/capacity and record the results using >, < and =

VIEW

Measurement

Mass, capacity and temperature
- choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels
- compare and order lengths, mass, volume/capacity and record the results using >, < and =

VIEW

Summer term

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.

VIEW

Number

Fractions
- recognise, find, name and write fractions 1/3 ¼ 2/4 ¾ of a length, shape, set of objects or quantity
- write simple fractions for example, ½ of 6 = 3 and recognise the equivalence of 2/4 and ½

VIEW

Geometry

Position and direction
- order and arrange combinations of mathematical objects in patterns and sequences
- 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).

VIEW

Problem solving

Measurement

Time
- compare and sequence intervals of 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.
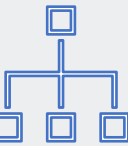
VIEW

Curriculum Overview

Year 3

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12

Autumn term

Number

Place value

- 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)
- 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
- solve number problems and practical problems involving these ideas.

VIEW

Number

Addition and subtraction

- 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.

VIEW

Number

Multiplication and division

- 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 multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods
- 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.

VIEW

Spring term

Number

Multiplication and division

- 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 multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods
- 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.

VIEW

Measurement

Length and perimeter

- measure, compare, add and subtract: lengths (m/cm/mm);
- measure the perimeter of simple 2-D shapes

VIEW

Number

Fractions

- count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10
- recognise, find and write fractions of a discrete set of objects: unit fractions and nonunit fractions with small denominators
- recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators

VIEW

Measurement

Mass and capacity

- measure, compare, add and subtract: mass (kg/g); volume/capacity (l/ml)

VIEW

Summer term

Number

Fractions

- recognise and show, using diagrams, equivalent fractions with small denominators
- add and subtract fractions with the same denominator within one whole
- compare and order unit fractions, and fractions with the same denominators
- solve problems that involve fractions

VIEW

Measurement

Money

- add and subtract amounts of money to give change, using both £ and p in practical contexts

VIEW

Measurement

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 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

VIEW

Geometry

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.

VIEW

Statistics

- interpret and present data using bar charts, pictograms and tables
- solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.
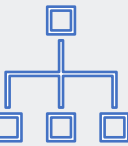
VIEW

Consolidation

Curriculum Overview

Year 4

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12

Autumn term

Number

Place value

- count in multiples of 6, 7, 9, 25 and 1000
- find 1000 more or less than a given number
- count backwards through zero to include negative numbers
- recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)
- order and compare numbers beyond 1000
- identify, represent and estimate numbers using different representations
- 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 positive numbers
- 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.

VIEW

Number

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.

VIEW

Measurement

Area

- find the area of rectilinear shapes by counting squares

VIEW

Number

Multiplication and division

- 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

VIEW

Consolidation

Spring term

Number

Multiplication and 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

VIEW

Measurement

Length and perimeter

- Convert between different units of measure
- measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres

VIEW

Number

Fractions

- recognise and show, using diagrams, families of common equivalent fractions
- count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.
- 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
- add and subtract fractions with the same denominator
- recognise and write decimal equivalents of any number of tenths or hundredths
- recognise and write decimal equivalents to ¼ ½ ¾

VIEW

Number

Decimals

- 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

VIEW

Summer term

Number

Decimals

- round decimals with one decimal place to the nearest whole number
- compare numbers with the same number of decimal places up to two decimal places
- solve simple measure and money problems involving fractions and decimals to two decimal places.

VIEW

Measurement

Money

- estimate, compare and calculate different measures, including money in pounds and pence

VIEW

Measurement

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;

VIEW

Consolidation

Geometry

Shape

- 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 lines of symmetry in 2-D shapes presented in different orientations
- complete a simple symmetric figure with respect to a specific line of symmetry.

VIEW

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.

VIEW

Geometry

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

VIEW

Curriculum Overview
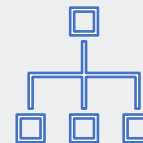
Year 5

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12

Autumn term

Number

Place value

▢ read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit
▢ count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000
▢ interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero
▢ 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
▢ read Roman numerals to 1000 (M) and recognise years written in Roman numerals.

VIEW

Number

Addition and subtraction

▢ 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 large numbers
▢ 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.

VIEW

Number

Multiplication and division

▢ 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
▢ 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 and cubed
▢ solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes

VIEW

Number

Fractions A

▢ 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
▢ recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [
▢ add and subtract fractions with the same denominator and denominators that are multiples of the same number

VIEW

Spring term

Number

Multiplication and division

▢ 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
▢ multiply and divide numbers mentally drawing upon known facts
▢ 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

VIEW

Number

Fractions B

multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams

VIEW

Number

Decimals and percentages

▢ read and write decimal numbers as fractions
▢ 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
▢ read, write, order and compare numbers with up to three decimal places
▢ solve problems involving number up to three decimal places
▢ recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal
▢ 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.

VIEW

Measurement

Perimeter and area

▢ measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres
▢ calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes

VIEW

Statistics

▢ solve comparison, sum and difference problems using information presented in a line graph
▢ complete, read and interpret information in tables, including timetables.

VIEW

Summer term

Geometry

Shape

▢ identify 3-D shapes, including cubes and other cuboids, from 2-D representations
▢ know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
▢ draw given angles, and measure them in degrees (o)
▢ identify:
▢ angles at a point and one whole turn (total 360o)
▢ angles at a point on a straight line and 1/2 a turn (total 180o)
▢ other multiples of 90o
▢ 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.

VIEW

Geometry

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.

VIEW

Number

Decimals

▢ add and subtract decimals with the same number of decimal places
▢ multiply and divide decimal numbers and those involving decimals by 10, 100 and 1000
▢ Order decimals

VIEW

Number

Negative numbers

▢ interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero

VIEW

Measurement

Converting units

▢ convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)
▢ understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints

VIEW

Measurement

Volume

▢ estimate volume (for example, using 1 cm3 blocks to build cuboids (including cubes))

VIEW

Curriculum Overview

Year 6

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12

Autumn term

Number — Place value
- 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.

VIEW

Number — Addition, subtraction, multiplication and division
- 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
- divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context
- perform mental calculations, including with mixed operations and large numbers
- identify common factors, common multiples and prime 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.
- solve problems involving addition, subtraction, multiplication and division
- use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

VIEW

Number — Fractions A
- 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

VIEW

Number — Fractions B
multiply simple pairs of proper fractions, writing the answer in its simplest form
- divide proper fractions by whole numbers

VIEW

Measurement — Converting units
solve problems involving the calculation and conversion of units of measure
- use, read, write and convert between standard units

VIEW

Spring term

Number — Ratio
- 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

VIEW

Number — Algebra
- use simple formulae
- generate and describe linear number sequences
- express missing number problems algebraically
- find pairs of numbers that satisfy an equation with two unknowns
- enumerate possibilities of combinations of two variables.

VIEW

Number — Decimals
- identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places
- multiply one-digit numbers with up to two decimal places by whole numbers
- use written division methods in cases where the answer has up to two decimal places

VIEW

Number — Fractions decimals and percentages
- associate a fraction with division and calculate decimal fraction equivalents for a simple fraction
- recall and use equivalences between simple fractions, decimals and percentages,

VIEW

Measurement — Area, perimeter and volume
- 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
- calculate the area of parallelograms and triangles
- calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm3) and cubic metres (m3), and extending to other units

Statistics
- interpret and construct pie charts and line graphs and use these to solve problems
- calculate and interpret the mean as an average.

VIEW

Summer term

Geometry — Shape
- draw 2-D shapes using given dimensions and angles
- recognise, describe and build simple 3-D shapes, including making nets
- 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 they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.

VIEW

Geometry — Position and direction
describe positions on the full coordinate grid
draw and translate simple shapes on the coordinate plane, and reflect them in the axes.

VIEW

Themed projects, consolidation and problem solving

Key Instant Recall Facts Overview

Overview

Each half term children are given Key Instant Recall Facts (KIRFs) to practise and learn at home. We expect the majority of the children within a year group to be working towards these targets. It is important that children know these thoroughly and are able to recall the facts instantly for their year group. By helping to develop these skills, your child will be more able to access other areas of the maths curriculum such as calculation methods, problem solving and reasoning. Children are expected to practise these facts at least three times per week. If your child is struggling to recall facts, please concentrate on a smaller number and practise more frequently.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Reception	I can say the number names in order from 1 to 10 when counting objects.	I can say the days of the week.	I am able to say one more and one less than a given number to 10.	I am able to partition numbers to 5 into two groups.	I know doubles of numbers to 5 (1+1, 2+2, 3+3, 4+4, 5+5).	I can count in twos.
Year 1	I know the days of the week and months of the year	I know number bonds for each number to 6.	I can tell o'clock or half past time.	I know doubles and halves of numbers to 10.	I can count in 2s, 5s and 10s.	I know all addition and subtraction facts for all numbers between 0 and 10.
Year 2	I know number bonds to 20.	I know the multiplication and division facts for the 10 times table.	I know the multiplication and division facts for the 2 times table.	I know doubles and halves of all numbers to 20.	I can tell the time to the nearest 5 minutes.	I know the multiplication and division facts for the 5 times table.
Year 3	I know number bonds for all numbers to 20.	I know the multiplication and division facts for the 3 times table.	I can recall facts about duration of time.	I know the multiplication and division facts for the 4 times table.	I know doubles and halves of all multiples of 10 to 500 and know doubles and halves of all multiples of 100 to 5000.	I know the multiplication and division facts for the 8 times table.
Year 4	I know number bonds for all numbers to 100.	I know the multiplication and division facts for the 6 times table.	I can recognise decimal equivalents of fractions	I can multiply and divide single-digit numbers by 10 and 100.	I know the multiplication and division facts for the 9 and 11 times tables.	I know the multiplication and division facts for the 7 times table.
Year 5	I know decimal number bonds to 1 and 10 (1 decimal place).	I can find factor pairs of numbers up to 100.	I know the multiplication and division facts for all times tables up to 12x12	I can recall square numbers up to 12^2 and their square roots.	I can recall metric conversions.	I can identify prime numbers up to 20.
Year 6	I can use times table facts to multiply and divide decimals	I can identify common factors of a pair of numbers.	I can convert between fractions, decimals and percentages.	I can identify prime numbers up to 50.	Consolidate previous work.	Consolidate previous work.

Progression of Vocabulary

Core Maths Vocabulary: All Classrooms to have these where relevant to learning.

Digit, integer, number, answer, solution, solve, work out, systematic, group, share, sort, diagram, represent, pattern, relationship, rule, sequence, explain, correct, incorrect, true, false, agree, disagree, same, different, bar model, part- whole model, formal method, equal to, more, less, greater than, fewer, less than, largest, greatest, least, most, estimate, approximately.

	Number- Place Value	Number- Addition and Subtraction	Number- Multiplication and Division	Number- Fractions	Measurement	Geometry- Shape	Geometry- Position and direction	Statistics
EYFS	Number; zero; numbers to 20; count, forwards, backwards; how many, more, fewer, equal, group; order, largest, smallest, less; even, odd	One more, one less, altogether, how many are left? Same, different, number bond, part-whole, add, take-away	Double, half, halve, halving, pairs, twice as many, share, equal, unequal, group, left over	Half, halve, halving	Now, before, soon, later, after, next, fastest; time, yesterday, today, tomorrow, day, week, weekend, month, year; Days of the week: Monday, Tuesday, etc. Seasons: spring, summer, autumn, winter; birthday, holiday; Morning, afternoon, evening, night, midnight	Shape, circle, triangle, rectangle, square, side, straight, curved, cylinder, cube, cuboid, cone, sphere, pyramid, face, same, different, pattern.	On, next to, over, under, around, through.	

| Year 1 | Numbers to 100; place value; digit, integer; symbol; compare; equal to, more, less, greater than, fewer, less than, greatest, smallest; first, second, third...last; ones, tens, partition, exchange; order, largest, smallest, biggest, least, most. | Number bonds, part, whole; plus; fact family, addition sentence, number sentence; how many more; number line; commutative; addition, more, make, sum, total, add together; calculation; Inverse equals, is the same as (including equals sign); subtract, , | How many altogether? How may are there?; groups, groups of, equal groups, unequal groups; row, column, array; number sentence; double, doubles; equal groups of 2, equal groups of 5, equal groups of 10; share, sharing, equally, odd, even, | Whole, parts, equal parts, the same; split; groups; share; equally; quarter; four equal parts One half, two halves A quarter, two quarters | Length, measure, measuring; ruler, cm; mass; balance, scale; volume, full, half full, quarter full, empty; capacity; holds, Container; money; value; coin; note; amount; 1p, 2p, 5p, 10p, 20p, 50p, £1, £2, £5, £10; hour, o'clock, half past, clock, watch, hands; hour, minute, second; before, after next, last now, soon, early, late quick, quicker, quickest, quickly, fast, faster, fastest, slow, slower, slowest, slowly old, older, oldest, new, newer, newest | Polygon, 2D, 3D, group, sort, corner (point, pointed) Face, side, edge Make, build, draw. | Turn, full, half, quarter, three quarter; direction; movement, move; position; left, right, up, down; top, bottom, middle, above, below, between; in front, behind. | |

Progression of Vocabulary

Year 2	2-digit; base 10; pattern; sequence; Numbers to one hundred Hundreds Partition, recombine Hundred more/less	Bar model; operation, inverse operation; column; exchange; bridge; method;	Times-table; facts; multiples; repeated addition; lots of; of; multiply; multiplied by; times; commutative; twos, fives, tens, threes; array; go into; divide, divide between, division, dividing; grouping, sharing;	Two quarters, three quarters, one third, two thirds; unit fraction, numerator, denominator, vinculum; equivalence, equivalent.	Change, total; distance; metres; g/kg; ml/l; temperature, thermometer, degrees Celsius, increase, decrease, warmer, colder; quarter past/to, 5 past, 10 past, twenty to etc, start, duration, end, interval, how long…? When did it start /end /finish…?, seconds;	Pentagon, hexagon, octagon, quadrilateral; prism; vertices, vertex; rotate; Symmetry, symmetrical, line of symmetry; horizontal, vertical; Fold; pattern, repeating pattern.	Direction, forwards, backwards; right angle; rotation, Clockwise, anticlockwise.	Count, tally, tally chart, table; data, represent, sort; pictogram, symbol; block diagram, axis; label, title, scale; most popular, most common, least popular, least common; Venn diagram,

Year 3	Numbers to one thousand; 3-digit; thousand; ascending, descending;	Column, column addition and subtraction; regroup; efficient; estimate.	Fours, eights; remainder; divisor, dividend, quotient.	Non-unit fraction; tenths, two tenths, three tenths etc; two thirds; fifth, sixth, ninth; decimal, decimal point;	mm; perimeter; leap year; minutes past/to; a.m., p.m.; analogue, digital; twelve-hour /twenty-four- hour clock; Roman numerals I to XIII.	Parallel, perpendicular; surface; acute angle, obtuse angle.	North, South, East, West; angle, point, acute, obtuse, ninety degrees Orientation (same orientation, different orientation)	Chart, bar chart; frequency table, Carroll diagram, Diagram

| Year 4	Numbers to ten thousand; Roman numerals to one hundred; round, nearest; approximately; negative, minus, count through zero; tenths, hundredths, 0.25, 0.5, 0.75.	Formal method.	Sixes, sevens, nines; produce, poduct; associative law; commutativity; factor, factor pair; formal method;	Proper fraction, improper fraction, mixed number; hundredths; Gattegno chart.	Km; rectilinear; area, square centimetres; warmest, coldest.	Isosceles, scalene, equilateral; rhombus, parallelogram, trapezium; regular polygon; mirror line, reflect.	Coordinates, translation, first quadrant, x-axis, y-axis.	Continuous data, discrete data; line graph, xaxis, y-axis.

Progression of Vocabulary

Core Maths Vocabulary: All Classrooms to have these where relevant to learning.

Digit, integer, number, answer, solution, solve, work out, systematic, group, share, sort, diagram, represent, pattern, relationship, rule, sequence, explain, correct, incorrect, true, false, agree, disagree, same, different, bar model, part- whole model, formal method, equal to, more, less, greater than, fewer, less than, largest, greatest, least, most, estimate, approximately.

Year 5	Numbers to a million; Roman numerals to one thousand; powers of 10.	Place holder.	Common factor, prime number, composite number, prime factor, square number, cubed	Common denominator; thousandth; simplify, simplified; convert; per	Imperial units, metric units, inches, lbs, pints; timetable; compound shape; volume, capacity, cm cubed/cubic cm.	Degrees, protractor, reflex angle; irregular polygon, dimensions; net.	Reflection, reflect.	

Year 6	Numbers to ten million. Algebra: Function, input, output; algebra, algebraic, rule; expression; substitute; formula, formulae; equation; value, possible values, enumerate.		Order of operations, BIDMAS; common multiple, lowest common multiple.	Cancel, highest common factor, common numerator. Ratio, proportion; for every_there are_, :(to); enlargement, scale factor.	Tonnes, ounces, stone, miles.	Vertically opposite (angles), internal angles; circumference, radius, diameter, centre.	Four quadrants.	Mean, pie chart.

Progression of Vocabulary
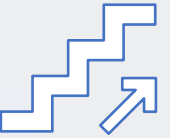
Multiplication and division

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
double	multiplication	multiplication tables	exchange	factor pairs	multiples	multi-digit numbers
half	division	commutative	mathematical statements	formal written layout	factors	long division
twice as many	arrays	repeated addition	missing number problems	distributive law	prime numbers	
equal			integer scaling problems	remainders	square numbers	
unequal			correspondence problems		cube numbers	
share			derived facts		short division	
group					product	
odd					dividend	
even					divisor	
					quotient	
					operations	

Fractions/Decimals/Percentages

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	whole	three quarters	tenths	decimal equivalence	fifth	
	half	third		hundredths	thousandths	
	quarter	equivalent fractions		convert	mixed numbers	
	equal parts	unit fractions		proper fractions	per cent %	
		non unit fractions		improper fractions	factors	
		numerator		decimal point	integer	
		denominator			complements	
		one whole				

Measurement (Measure and Length)

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
measure	compare	standard units	millimetre mm	kilometres km	decimal notation	conversion
wide(er)		estimate	perimeter	rectilinear figure	scaling	miles
narrow(er)		order		area	metric units	formulae
compare		record results			imperial units	parallelograms
long(er)(est)		centimetre cm			inches	triangles
short(er)(est)		metre m			compound shape	feet
length					irregular shapes	
					square centimetres	
					square metres	

Measurement (Height, Weight and Capacity)

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
height	mass	kilogram kg			cubic centimetre	cubic metre
long(er)/short(er)	volume	gram g			pounds	cubic millimetre
tall(er)/short(er)		quarter full			pints	cubic kilometre
weight		three quarters full				gallons
capacity		litres l				stones
heavy/light		millilitres ml				ounces
heavier than		temperature				
lighter than		Celsius				
big/bigger/biggest						
full/empty						
more than						
less than						
half/half full						

Geometry – Properties of Shape

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
2-d shapes	sides	pentagon	right-angle triangle	isosceles	regular polygon	radius
rectangle	corners	hexagon	heptagon	equilateral	irregular polygon	diameter
square	properties	line of symmetry	octagon	scalene		circumference
circle	pyramids	properties	polygon	trapezium		dimensions
triangle	faces	cylinder	properties	rhombus		
characteristics		edges	prism	parallelogram		
3-d shapes		vertices		kite		
cuboids		vertex		geometric shapes		
cubes				quadrilaterals		
cone						
spheres						
curved						
straight						
flat						

Assessment

Assessment for learning
The structure of the teaching sequence, ensures that children know how to be successful in their independent work. Guided practice provides further preparation for children to be able to apply the skills, knowledge and strategies taught during the independent phase. Common misconceptions are addressed within the teaching sequence and key understanding within each small step is reviewed and checked by the teacher and the children before progression to further depth.

Formative assessment
Short term assessment is a feature of each lesson. Observations and careful questioning enable teachers to adjust lessons and brief other adults in the class if necessary. The lesson structure is designed to support this process and the reflect task at the end of each lesson also allows for misconceptions to be addressed.

Summative assessment
At the end of each blocked unit of work, the children complete the end of unit assessment. The outcome of this is used by the teacher to ensure that any identified gaps in understanding can be addressed before the next unit is taught.

Teachers administer a termly WRM progress test which tests arithmetic, reasoning and problem-solving which specifically links to the coverage for that term. The results of these papers are used to identify children's ongoing target areas. They are also used alongside the end of unit assessments, outcomes of work and Star Maths.

End of block assessment (version B)

Assessment data in maths is reviewed throughout the year to inform interventions and to also ensure that provision remains well-informed to enable optimum progress and achievement. End of year data is used to measure the extent to which attainment gaps for individuals and identified groups of learners are being closed. This data is used to inform whole school and subject development priorities for the next school year.

Teachers regularly meet to moderate teacher assessment judgements and these judgements are also moderated with other schools in the Local Authority or MAC.

Inclusion

Taking a mastery approach, adaptation occurs in the support and intervention provided to different children, not in the topics taught, particularly at earlier stages. Most children are taught the same content but the questioning and scaffolding individual children receive in class as they work through problems will differ, with some children challenged through more demanding problems, which deepen their knowledge of the same content before acceleration onto new content. Children's difficulties and misconceptions are identified through immediate formative assessment and addressed with rapid intervention – commonly through individual or small group support later the same day.

A range of inclusion strategies are embedded in practice and teachers are aware of the special educational needs of the children in their class, as well as those who have English as an additional language.

Although the expectation is that the majority of children will move through the programmes of study at broadly the same pace, the National Curriculum states: 'Decisions about when to progress should always be based on the security of children's understanding and their readiness to progress to the next stage.' If a child's needs are best met by following an alternative plan, including coverage of the content from a previous year, this will be directed by the SENDCo, in collaboration with the class teacher and with the knowledge of SLT. Specific arrangements for the provision of children with SEND will be communicated to parents and carers during SEND reviews and by children's Individual Plans which incorporate suitable targets for their ability.

The school is committed to ensuring the active participation and progress of all children in their learning. We provide equal access for all learners through curriculum balance, curriculum time and the use of resources. We strive hard and take all reasonable steps to meet the needs of all pupils, including those with special educational needs, those with disabilities, those with special gifts and talents and those with English as an additional language.