Learning in Maths at St Margaret Mary's

We try to follow Jesus in everything we do.

Why is Maths important at St Margaret Mary's?

Our Maths curriculum has been specifically tailored to meet the needs of our school community. It is designed to be broad and balanced, providing all pupils with the opportunity to be curious and wise in their learning and knowledge; to be attentive and discerning in order to make sense of the world around them and give purpose as to why we learn about and from Maths. This will help them become faith-filled and hopeful in their abilities to change and transform our society.

3I's

Intent

The National Curriculum (2014) states:

"Mathematics is a creative and highly inter-connected 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."

At St Margaret Mary's we believe that all children can achieve in mathematics. We aim to ensure that all children become FLUENT; REASON and EXPLAIN mathematically and SOLVE PROBLEMS.

We aim to do this through:

- providing cross-curricular opportunities
- creating a lively, exciting and stimulating environment
- promoting the concept that acquiring maths knowledge and skills provides the foundation for understanding the world
- encouraging children to use mathematical vocabulary to reason and explain
- developing a curiosity of maths, creating a sense of awe and wonder
- challenging children to stretch themselves and take risks in their learning

At each stage of learning, children should be able to demonstrate a deep, conceptual understanding of mathematical topic and build on this over time. Children should be able to select which mathematical approach is most effective in different scenarios as their understanding of mathematical topic becomes deeper.

Implementation

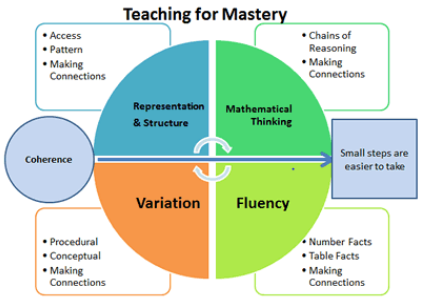
At St Margaret Mary's we work towards a mastery approach in the teaching and learning of mathematics.

- The expectation is that most pupils will move through the programmes of study at broadly the same pace.
- Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content.
- Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.

To support our mastery approach, the school uses a variety of resources. We regularly work with and attend training sessions with Tara Loughran (maths consultant with NW Three Maths Hub). We use White Rose resources, Power Maths and Maths No Problem teacher resources.

We plan by using the 5 Big Ideas (provided by the NCETM/Maths Hub Mastery Specialist Programme). These include:

- Mathematical Thinking
- Representation and Structure
- Coherence
- Variation
- Fluency



Lesson Design

In **EYFS**, we aim to provide solid foundations of number sense and we put emphasis on mastery of key early concepts. Learning is based on pupils' interests and current themes. It focuses on the expectations from Development Matters/Birth to 5 Matters. Close consideration has also been made so there are links to the KS1 curriculum. Through work with NW Maths Hub 3, we have participated in the Developing Mathematical Fluency in EYFS Programme, as well as the I Can Calculate Programme (from counting to calculating in early maths). Pupils spend time exploring the 'story' of numbers to twenty and use different models and images to help form the solid foundation for further progress. Teachers use the VCPA approach to conceptual development (verbal, concrete, pictorial, abstract).

In **Key Stage 1**, pupils focus on strengthening these early foundations in numeracy, developing confidence and mental fluency. A huge focus is on working with different number bonds to twenty and exploring the different strands of mathematics within this, wherever possible. Teachers continue to use the CPA approach whereby concrete materials, pictorial representations and abstract symbols, allow children to visualise maths in varied ways, see connections and to independently explore and investigate a topic. Practical activities and resources, again linked to pupils' interests and current themes, offer the children a deeper mathematical understanding of more complex concepts.

Throughout Key Stage 1, it is important that children gain a secure knowledge of number and place value and become confident when using the four operations in both formal methods as well as problem solving where often the approach is not immediately evident.
Other subjects may have strong links to some maths topics allowing cross-curricular teaching. For example, shape through art or computing, measures through science or coordinates in geography. This is to ensure we continually maximise learning opportunities for all pupils across an entire curriculum.

In **Lower Key Stage 2,** the principal focus of mathematics teaching is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers. At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number. The CPA approach continues to be used to deepen children's understanding. By the end of Year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work. Regular TTRS competitions are set to encourage children to learn these.

In **Upper Key Stage 2,** the principal focus of mathematics teaching is to ensure that pupils extend their understanding of the number system and place value to include larger integers. The CPA approach continues to be used to deepen children's understanding. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio. At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them. By the end of Year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Impact

A good mathematician at St Margaret Mary's should develop a range of skills as a result of such teaching: make connections and links; develop problem solving skills; and develop reasoning skills. We aim to develop such skills so that they are transferable to other curriculum areas, particularly science, geography and computing. We aim to develop

competent and confident mathematicians who enjoy lessons and all aspects of maths in the world around them. We aim to do this by constantly challenging pupils to achieve their full potential. The structure of the mathematics curriculum ensures that all children are taught the strands expected from the 2014 National Curriculum.

Assessment

As well as live marking and AfL in daily lessons, White Rose end-of-unit assessments are carried out after sufficient time to assess children's secure understanding of a numeracy topic. White Rose end-of-term assessments are also used to assess attainment and progress. The teaching of mathematics is monitored frequently by leaders through lesson observations, learning walks, book scrutiny and pupil interviews.

Through the design of the mathematics curriculum at St Margaret Mary's, this ensures that we are able to maintain high standards of attainment above that of Manchester and national standard.

Maths Long Term Plan

St Margaret Mary's - Maths Curriculum Overview

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS	Number & Numerical Patterns: reciting numbers to 10, counting to 8 Ordering numbers to 10 Shape & Measure: patterns, time, ordering & sequencing events, length & distance		Number & Numerical Patterns: counting to 20, reciting and ordering numbers to 10 and beyond Problem Solving: addition & subtraction Shape & Measure: weight, 2D & 3D shapes		Number & Numerical Patterns: counting to 20 Problem Solving: addition & subtraction (counting on and back), halving, doubling & sharing Shape & Measure: 2D & 3D shapes, patterns, capacity, money, height	
Year 1	Number: Place Value 0-10 Ordering/+1/-1 Measure: capacity	Number: Addition & Subtraction up to 10 Doubles & halves Geometry: 2D&3D shapes	Number: Place Value counting to 20 Counting in 2s, 5s, 10s Doubles & halves	Number: Addition & Subtraction T&O (not crossing) Measurement: Time Place Value counting to 50	Fractions: halves & quarters Geometry: Position and Direction Measurement: weight	Number: Measurement: Length
Year 2	Number: Place Value Addition and Subtraction Measurement: Money Number: Multiplication and Division		Number: Multiplication and Division Statistics Geometry: Properties of Shape Number: Fractions Measurement: Length and Height		Geometry: Position and Direction Problem Solving Measurement: Money Measurement: Time Investigations	
Year 3	Number: Place Value Addition and Subtraction Fractions Multiplication and Division Statistics		Number: Fractions Addition and Subtraction Geometry: Properties of Shape Measurement: Time, Length and Perimeter Multiplication and Division		Number: Fractions & Decimals Addition and Subtraction Multiplication and Division Measurement: Mass and Capacity Statistics	
Year 4	Number: Place Value Addition and Subtraction Measurement: Mass & Capacity, Area Number: Multiplication and Division		Number: Fractions & Decimals Addition and Subtraction Measurement: Time Number: Multiplication and Division		Geometry: Properties of Shape Measurement: Length Number: Decimals Geometry: Properties of Shape Position and Direction Statistics	
Year 5	Number: Place value Decimals Multiplication & Division Measurement: converting units, area & volume		Number: addition & subtraction Fractions Multiplication & Division Measure: Time Geometry: Position & Direction		Geometry: Properties of Shape , angles, perimeter Number: Fractions & Decimals, Addition and Subtraction Measurement: Perimeter Number: Percentages, Multiplication & Division Statistics	
Year 6	Number: Place value Multiplication & Division Measurement: area & perimeter, volume, converting units Addition & Subtraction		Number: Fractions, Decimals, Percentages Ratio & Proportion Statistics Geometry: Position & Direction		Geometry: Properties of Shape Number: Algebra Problem Solving Investigations	

Maths Medium Term Plan

	Nursery	Reception	Links to KS1
Number	- Subitises up to 3 objects - Link numerals with amounts up to 5 and maybe beyond - Make early links with numbers using early number bonds (up to 3/5) - Show 'finger numbers' up to 5 (3-4) - Begin to recognize numerals 0 to 10 - Can say the rhyme of number formation and attempt to form numerals in different ways, e.g. in the air, using writing tools/malleable/natural resources	- Can subitise up to 5 - Can match numerals to amounts up to 10 - Can order numbers up to 10 - Can accurately write the numerals 0-10 - Can recall number bonds to 5, then to 10 - Can add two single digit numbers together to find the total - Can subtract a single digit number away from another single digit number	- Count to 100 starting from 0 or 1. - Count, read and write numbers to 100 in numerals. - Identify and represent numbers using objects and pictorial representations - Read and write numbers from 1 to 20 in numerals - Add and subtract one-digit and two-digit numbers to 20, including zero. - Can estimate a number of objects and check its quantity up to 20.
Numerical Patterns	- Recite numbers past 5 (3-4) - Say one number for each item in order: 1, 2, 3, 4, 5. - Counts up to five items, recognising that the last number said represents the total counted so far (cardinal principle) - Links numerals with amounts up to 5 and maybe beyond - Recognise and begin to order numerals 1-5 then to 10 - Compares two small groups of up to five objects, saying when they are the same number of objects in each group, e.g. *You've got two, I've got two. Same!* - Begins to verbally count in 10's - Points or touches (tags) each item, saying one number for each item, using the stable order of 1,2,3,4,5 - Beginning to recognize that each counting number is one more than the one before	- Count beyond 10 - Can verbally count forwards and backwards up to 10 and beyond, from any given number - Can identify odd and even numbers up to 10 - Can double or halve a number (using manipulatives or a drawing to help) - Understand the 'one more than/one less than' relationship between consecutive numbers - Can count in 2s,5, and 10s - Estimates numbers from 0-10 (and beyond) and back from 10-0 - Shows awareness that numbers are made up (composed) of smaller numbers, exploring partitioning in different ways with a wide range of objects	- Given a number, identify one more and one less.
Problem solving	- experiment with their own symbols and marks as well as numerals (3-4) - *Explores using a range of their own marks and signs to which they ascribe mathematical meaning*	- Can problem solve up to 5 e.g. world problems (If I had 2 apples and my friend gave me 2 more how many would I have?)	- Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs

	- Beginning to use understanding of number to solve practical problems in play and meaningful activities - Complete a jigsaw with knobs on or a 6 piece puzzle. - Make mathematical links in stories, rhymes and play situations	- Begins to explore and work out mathematical problems, using signs and strategies of their own choice, including (when appropriate) standard numerals, tallies and "+" or"-"	- Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations.
Shape, space, size and measures	- Identify differences in size, weight, shape and capacity, then begin to make and talk about comparisons. - Learn the names of some 2D shapes and their properties. - Make number links to shape and see shapes in different patterns and within the environment. - Chooses items based on their shape which are appropriate for the child's purpose - Enjoys partitioning and combining shapes to make new shapes with 2D and 3D shapes - Responds and uses language of position and direction - Predicts, moves and rotates objects to fit the space or create the shape they would like - In meaningful contexts, finds the longer or shorter, heavier or lighter and more/less full of two items	- Can select, rotate, and manipulate shapes to create increasingly complex 2D and 3D pictures/ models - Can recognise that shapes can have other shapes within them, e.g. notice that two triangles can be combined to create a square - Can compare and order objects by length, weight and capacity - Can recognise some coins and begins to understand the value of them. - Attempts to make up an amount using the value of one, two or three coins (up to 10p) - Investigates turning and flipping objects in order to make shapes fit and create models; predicting and visualising how they will look (spatial reasoning)	- Compare, describe, and solve practical problems for length, weight, and capacity. - Recognise and know the value of different denominations of coins and notes. - Recognise and name common 2D and 3D shapes, including circles, triangles, rectangles (including squares), pyramids, spheres and cuboids (including cubes).
Pattern	- Begin to notice patterns in various contexts, for example, animals, natural finds as well as purpose made and begin to talk about what they can see, including similarities and differences - Explores and adds to simple linear patterns of two or three repeating items, e.g. stick, leaf (AB) or stick, leaf, stone (ABC) - Joins in with simple patterns in sounds, objects, games and stories dance and movement, predicting what comes next	- Developing understanding of patterns and what they are and can talk about patterns they find, copy and/or create - Can continue a repeating pattern using two or three shapes/ lines/ colours etc. (AB, ABC, ABB, ABBC) - Can copy a repeating pattern (AB, ABC, ABB, ABBC) - Can create a repeating pattern (AB, ABC, ABB, ABBC) - Can fix a mistake within a repeating pattern (AB, ABC, ABB, ABBC)	- count in multiples of twos, fives, and tens.
Time	- Recognise, talk about and begin to make a comparison of stages of development linked to the lives of themselves and family members, e.g. know they are different now from when they was a baby. - Sequence a series of events/simple instructions in the correct order - Begin to describe a sequence of events or experiences in the correct order	- Can show o'clock on a clock, then 1 hour later/before - Understands what they normally do at given times in the day e.g. (what do you do at 9am/3pm etc. - Increasingly able to order and sequence events using everyday language related to time - Can say the days of the week and some months of the year in the correct order - Beginning to experience measuring time with timers and calendars	- Sequence events in chronological order using language, such as before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening. - Compare, describe, and solve practical problems for time. - Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.
Mathematical language	- Begin to use correct mathematical language in context and to demonstrate their understanding, e.g. more than, fewer than, number names, big, small, tall, short, long, flat, heavy, light, up, down , on, under, side, soon, long time, straight, curve, pointy, spotty, stripy, swirly and some properties for 2D/3D shapes.	- Use language associated with time e.g. later, soon, today, tomorrow, yesterday, week, month, year - Can name 2D and 3D shapes - Use language relating to height, weight and capacity e.g. taller/ shorter/ tallest, heavier/ lighter/ balanced, empty/ half full/ full etc.	

Year 1

Autumn NB- Autumn Term is 15 weeks, therefore extend Number PV within 20 strand to end of term	**Number: Place value (within 10)** Counting within 5 Counting within 10 Count all Leading to ordering/+1/-1	**Measure Capacity**	**Number: Addition and Subtraction (within 10)** Bonds to3, 4, 5, 6, 7, 8, 9, 10Language of = to, more, less than, fewer, **Counting on** **Counting back**	**Geometry** Shape properties 2d and 3d	**Multiplication and Division** Doubles and halves Concept of
Include Measurement Knowledge of coins Reasoning and problem solving		Include Measurement Reasoning and problem solving			Include Measurement Reasoning and problem solving

Spring	**Number: Place Value** Counting to 20	**Place value Count in 2s, 5s, 10s**	**Multiplication and Division** Halves and doubles	**Addition and Subtraction** T and O not crossing	**Measure** Time	**Place Value To 50**
Include Measurement Knowledge of coins Reasoning and problem solving		Include Measurement Reasoning and problem solving		Include Measurement Reasoning and problem solving		Reasoning and problem solving

Summer	**Fractions** Halves and Quarters include Half O clock Half a litre	**Position and Direction**	**Measurement** **Weight**	**Addition and Subtraction** Crossing tens Addition and subtraction facts within 20 + step number problems	**Multiplication and Division** Solve 1 step problems Arrays	**Place Value Partitioning** 2-digit numbers into T and O	**Measurement** Length
Include Measurement Reasoning and problem solving				Include Measurement Reasoning and problem solving	Reasoning and problem solving		

Year 2

Autumn NB- Autumn Term is 15 weeks, therefore extend Multiplication strand	**Number:** Addition and subtraction bonds	**Number: Place Value** PV of digits in TO Partitioning numbers into T and O including other combinations Compare and Order numbers up to 100	**Measure** Capacity	**Addition and Subtraction** Bonds with multiples of 10 to 100 2-digit not crossing the boundaries	**Multiplication and Division** Arrays Commutativity Problem Solving Division problems	**Geometry** Properties of shape 2d and 3d Describing and comparing	
Include Measurement Reasoning and problem solving			Include Measurement – including money Reasoning and problem solving		Include Measurement Reasoning and problem solving	Include Measurement Reasoning and problem solving	

Spring **Number: Place Value**	**Place Value** Partitioning numbers in more than one way	Addition and Subtraction TO + multiple of 10 2-digit crossing the tens boundary	Measure Money	**Multiplication and Division** Recall of the facts 2s 3s 5s 10s Place value – counting in 2s 3s 5s from 0 Counting in tens from any number	**Fractions** Recognise and find 1/3 ¼ 2/4 ¾ of length, shape and quantity Equivalence of ½ and 2/4	**Time** Quarter past Quarter to	**Addition and Subtraction** Adding 3 1-digit numbers
Include Measurement Reasoning and problem solving				Include Measurement Reasoning and problem solving	Include Measurement Reasoning and problem solving		Reasoning and problem solving

Summer	**Multiplication and Division** Mathematical statements for 2, 5, 10 times tables Commutativity Problem solving	**Measure** **Length**	**Position and Direction** Patterns and sequences	**Fractions** Recognise and find 1/3 ¼ 2/4 ¾ of length, shape and quantity Equivalence of ½ and 2/4	**Addition and Subtraction** TO + TO to 100 TO – TO to 100	Statistics	**Solve problems including Addition and Subtraction** TO + TO TO – TO	**Measurement** Weight
Include Measurement Reasoning and problem solving				Include + and – Reasoning and problem solving	Link to time Reasoning and problem solving	Include Measurement Place value of counting in 2s 5s 10s Reasoning and problem solving	Reasoning and Problem solving	Reasoning and problem solving

Year 3

Autumn NB- Autumn Term is 15 weeks, therefore extend Multiplication and Division strand to end of term	Number Addition and Subtraction bond practise of multiples of 10	**Number: Place Value** Recognise pv in each digit in HTO Compare and order numbers up to 1,000 Identify represent and estimate umbers up to 1,000	**Number: Addition and Subtraction** (up to) 3 digit + ones (up to) 3 digit + tens (up to) 3 digit + hundreds (up to) 3 digit - ones (up to) 3 digit - tens (up to) 3 digit - hundreds *TO+ TO crossing hundreds *** *TO – TO crossing tens *** • Column method not required at this point in the year	**Fractions** Find $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{1}{3}$ of a given amount	**Number: Multiplication and Division** Count in 4s 8s 50s 3x 4x 8x facts	**Statistics**
Include measurement – money Reasoning and problem solving			Include measurement – length Reasoning and problem solving		Include measurement – across all contexts Reasoning and problem solving	
Spring	**Fractions** Find fractions of shapes, amounts Recognise and use fractions as numbers Compare and order fractions Not tenths	**Geometry** Property of 2d and 3d shape Turns Right angles horizontal, vertical, parallel and perpendicular lines	**Time** Analogue clocks Roman Numerals Read and write analogue To the nearest min 12 and 24 hr	**Addition and Subtraction** TO+ TO crossing hundreds TO – TO crossing tens	Measurement Length and perimeter	**Multiplication and Division** 3x 4x 8x facts Division with remainders
Include measurement Reasoning and problem solving		Reasoning and problem solving		Include statistics, length money Reasoning and problem solving		Include measurement – perimeter Reasoning and problem solving
Summer	**Fractions** Add and subtract fractions within 1 whole	**Decimals** 0.1 = $\frac{1}{10}$	**Addition and Subtraction** Column method HTO + HTO Column method HTO - HTO	**Measure** Compare mass	**Multiplication and Division** TO X O TO ÷ O	Measurement Capacity	**Statistics** Interpret and present data using bar charts, pictograms, tables
Include measurement Reasoning and problem solving			Reasoning and problem solving	Reasoning and problem solving	Reasoning and problem solving		Reasoning and problem solving

Year 4

Autumn	Number Bonds 100s + 10s	**Number: Place Value** Count in 7s 9s 25s 1,000s Find 1,000 more / less Order and compare numbers beyond 1,000 Recognise pv of each digit in a 4-digit number Rounding to nearest 10, 100, 1,000	Measurement Mass and Capacity	**Addition and Subtraction** Mental addition and subtraction using 100s and 1000s add and subtract 3-digit using mental strategies	**Multiplication and Division** Facts for 6s, 7s, 9s, 11s, 12s Leading to TO x O where ones is 2,3,4,5,8		**Measurement** Area
Include Measurement Reasoning and problem solving			Include Measurement Reasoning and problem solving		Include Measurement Reasoning and problem solving		
Spring	**Fractions** Equivalent fractions Fractions of quantities	**Fractions** Addition and subtraction of fractions with the same denominator across 1 whole	**Decimals** Decimal equivalents Rounding and comparing decimals Recognise tenths and hundredths	**Decimals** Multiplying and Dividing by 10 and 100 (explicit link to measure)	**Addition and Subtraction** Add and subtract numbers to one decimal place	**Time** Roman Numerals Read, write and convert 12 and 24Convert hours to minutes, minutes to seconds, years to months, weeks to days	**Multiplication and Division** Factor pairs Written methods for TO X O HTO X O TO ÷ O inc remainders
Include Measurement Reasoning and problem solving			Include Measurement Reasoning and problem solving		Reasoning and problem solving		
Summer	**Geometry / Measure** Properties of 2d and 3d shape Perimeter	**Measurement** Length	**Decimals** Fraction and decimal equivalents Addition and subtraction of up to 4 digits with decimals	**Geometry: Position and Direction** Co-ordinates Positions and translations	**Place Value** Negative numbers **Measurement** Capacity		**Statistics** Bar charts Time graphs Time tables
Include Measurement including money and length Reasoning and problem solving			Reasoning and problem solving	Reasoning and problem solving	Include Measurement Reasoning and problem solving		

Year 5

Autumn NB- Autumn Term is 15 weeks, therefore extend Addition and Subtraction strand to end of term	**Number bond practise** Multiplication Table practise	**Number: Place value** All strands of NC	**Decimals** **Partition and order numbers to 2dp** **Round to 1dp**	**Multiplication and Division** Properties of number – sq, cubed, factors, prime	**Multiplication and Division Measure** Multiplying whole numbers and decimals by 10, 100, 1,000 Converting units of **measure**	**Multiplication and Division** X and ÷ mentally drawing on known facts	**Measurement** Area Volume (Measure)
Include measurement – all contexts Reasoning and problem solving			Include measurement – all contexts Reasoning and problem solving Include use of decimals and statistics through problem solving	Include measurement all contexts Reasoning and problem solving	Include measurement all contexts Reasoning and problem solving		Include measurement all contexts Reasoning and problem solving
Spring	**Addition and Subtraction** Mental vs written	**Fractions** Recognising mixed numbers and improper fractions	**Fractions** Order with denominators which are all multiples of the same number	**Fractions** Add and subtract where denominators and multiples of the same number	**Multiplication and Division** 4 digit x 1 digit 2 digit x 2 digit 3 digit x 2 digit 3 digit ÷ 1 digit 4 digit ÷ 1 digit	**Measurement Time** Reading timetables	**Geometry Position and Direction**
Include measurement – all contexts Reasoning and problem solving					Include measurement – all contexts Reasoning and problem solving		Include measurement – all contexts Reasoning and problem solving
Summer	**Geometry** Properties of 2d shape Angles Perimeter	**Fractions** Multiplying proper fractions by whole numbers	**Number: decimals** Reading and expressing as decimals Order and compare to 3dp Equivalents	Addition and subtraction of mixed decimals Perimeter	**Percentages**	**Multiplication and Division strategies**	**Statistics** All objectives	**Measure** Involving all operations
Reasoning and problem solving	Include measurement – all contexts Reasoning and problem solving					Include measurement – all contexts Reasoning and problem solving		Include measurement – all contexts Reasoning and problem solving

Year 6

Autumn NB- Autumn Term is 15 weeks, therefore extend 4 ops strands	**Multiplication facts** **Bonds using decimals to 1dp**	**Number: Place Value** Revise all NC objectives	**Multiplication and Division** Factors, multiples, prime numbers X powers of 110 4-digit x 2 digit 4 digit ÷ 2 digits BIDMAS (if secure)		**Measurement** Area and Perimeter Volume	**Measure** Converting units of measure	**Addition and Subtraction** Word problems All methods Revise all NC objectives
Include measurement – all contexts Reasoning and problem solving			Include measurement – all contexts Reasoning and problem solving		Include measurement – all contexts Reasoning and problem solving		Reasoning and problem solving
Spring	**Fractions** Simplifying fractions Comparing fractions Add and subtract with different denominators Multiplying proper fractions Dividing proper fractions by a whole number		**Decimals, percentages** Equivalents Parts of whole shape, quantity compare and order	**Ratio and Proportion** Problem solving involving: Missing values (x and ÷) Calculation of percentages Shapes and scale factors Fractions and multiples	**Statistics** Pie charts Line graphs Mean, median, mode, range		**Geometry: Position and Direction** Position in all 4 quadrants **Translation** **Reflection**
Include measurement – all contexts Reasoning and problem solving			Include measurement – all contexts Reasoning and problem solving	Include measurement – all contexts Reasoning and problem solving	Include measurement – all contexts Reasoning and problem solving		Reasoning and problem solving
Summer	**Geometry** Properties of 2d and 3d shapes	**Algebra** Simple formulae Generate and describe linear sequences	**Multi-step problems** **All contexts**	SATs	**Algebra** Generate and describe linear sequences Express missing number problems algebraically Find pairs of numbers that satisfy an equation with 2 unknowns		**Properties of Number** Sequences – triangular numbers, Fibonacci Maths through art
Include measurement – all contexts Reasoning and problem solving		Include measurement – all contexts Reasoning and problem solving	Reasoning and problem solving Include measurement – all contexts		Reasoning and problem solving		Include measurement – all contexts Reasoning and problem solving

What Maths looks like at St Margaret Mary's

What a maths lesson looks like at our school

Planning:

Planning begins from a thorough understanding of children's needs gleaned through formative and summative assessment and tracking, combined with high expectations and ambition for all children to achieve.

Long-term planning outlines the key topics taught over the year, highlighting specific topics that need revisiting and reinforcing in order for children to progress. Medium-term planning outlines the areas of maths in more detail that will be taught during the term to ensure coverage of the objectives from the National Curriculum. Through working with Tara Loughran, using White Rose Hub materials, alongside the DfE Ready-to-Progress guidance, this forms the basis for medium-term planning. Weekly plans follow the White Rose small-steps sequences. Teachers begin by revisiting prior learning and building on this knowledge to help children reach their age related expectations and beyond. The 5 Big Ideas are used by teachers to facilitate teaching for mastery.

In EYFS, the St Margaret Mary's Progress Model is used which combines objectives from Birth to 5 Matters as well as Development Matters. A huge focus is on counting (Nursery) and Number (Reception). A 'number of the week' is taught with links made to other areas of maths wherever possible. Planning is also linked to key topics and books throughout the year.

Key mathematical vocabulary is a main focus for daily lessons. It is essential that the children are exposed to and supported in developing quality and varied mathematical vocabulary. This will support them in accessing mathematical problems, as well as presenting mathematical justification, argument or reasoning – a key aim of the national curriculum.

It is the responsibility of all staff to facilitate mathematical discussion within lessons through modelling the use of the vocabulary and displaying it on the maths working walls within their classrooms. Furthermore, visual and concrete resources should be used wherever possible to ensure the maths curriculum is accessible for all learners.

Teaching:

What a maths lesson looks like at St Margaret Mary's

In EYFS, maths lessons take place after lunch and last approximately 30 minutes. The lesson is then followed by a continuous provision activity involving the maths focus.

Maths lessons in KS1 & KS2 take place in the mornings and last 45 minutes to an hour.

In KS1, all maths lessons begin with a two minute challenge. This is an opportunity for the children to revisit previous topics. These mostly involve counting and number activities but will include more shape and measure as the year progresses.

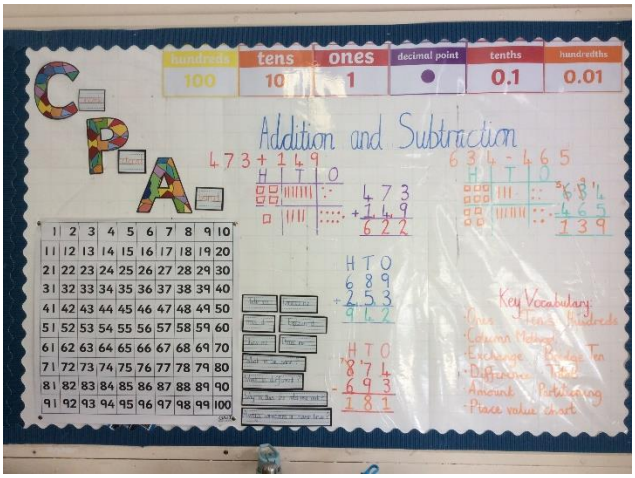
In KS2, all maths lessons start with times tables. Children will chant the times tables and/or participate in a times tables activity. The children will then complete a basic skills session lasting for 10-15 minutes. This will usually cover a topic (LKS2) or a range of topics (UKS2) previously studied.

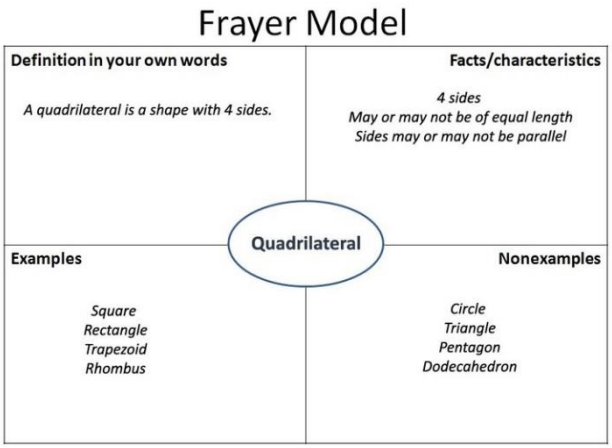
The teachers will then share the learning objective for the lesson with the children. An opportunity will then be given for 'maths talk' where a 'hook' question will be discussed. This is often in the form of 'true or false?', 'Explain why/why not', 'prove this'. This enables teachers/teaching assistants to gage what the children already know in a topic and this can then be used again at the end of the lesson as a plenary activity to see what the children have learnt.

After teacher input, children are given a range of activities to complete which include fluency, reasoning and problem solving questions. They may also include an investigation/ a longer activity from the Maths Toolkit (Tara L). Through mini-plenaries, teachers can model answers and address misconceptions if necessary. Concepts are taught using a variety of concrete, pictorial and abstract methods. Manipulatives are readily available in lessons for the children to use when needed. Teaching assistants will often work with individual children (planned and discussed with the teacher before the lesson) and will support the rest of the class where necessary.

Displays:

Currently, all classrooms have a maths working wall which is constantly being updated with every new topic. These displays include CPA as well as fluency, reasoning and problem solving questions. As we move forward, a bigger focus will be on maths vocabulary and how children use this in communication of their understanding of concepts within the world around them.



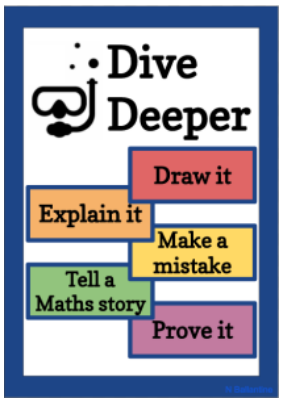


Assessment:

Assessment for learning occurs throughout the maths lesson where all members of staff (teachers and teaching assistants) can gage where the children are working and can adapt their teaching/input where necessary. Teachers use mini-plenaries at different stages

through the lesson and feedback between staff as well as between staff and pupils should be given regularly (in the form of live marking).

Children are encouraged to use self-assessment through marking their work when the teacher goes through activities as a class. This enables opportunities for the teacher to model answers and also for misconceptions to be addressed. Children are also encouraged to self-assess against the lesson objective given at the start of each lesson. Children mark their work and make corrections in purple pen whilst teachers use green pen to mark (in line with the school's marking policy). Teachers address misconceptions through marking by putting a dot next to an answer and giving further examples or such misconceptions should be covered within in the next lesson. If children have grasped concepts easily and have correctly answered most of the activities, 'next steps' are given by the teacher in the form of 'Dive Deeper' activities.



At the end of each topic, children complete the White Rose end-of-unit assessment. Teachers then use this information to plan for basic skills activities at the start of upcoming lessons. Where children need even more support, interventions are planned where the teaching assistant works with the group at the beginning of subsequent lessons.

White Rose end-of-term assessments are completed by the children at the end of the autumn, spring and summer terms. Teachers use question level analysis to assess children's strengths and areas for development. This then aids planning for the next term or is passed on to the next class teacher.

In EYFS, assessment is an ongoing process throughout the day. This takes place through routine daily activities, as well as discrete maths lessons. Individual pupils are tracked and assessed over a 2 week block and achieved objectives are highlighted on the progress model.

Inclusion:

Maths is planned for according to the individual needs of the children – in line with the whole school policy surrounding equal opportunities and based upon our school aim to recognise that each child is unique. There are many ways in which SEND children can access the maths curriculum including:

- Having set suitable learning challenges

- Ensuring familiarity with mathematical equipment/manipulatives
- The use of small steps during activities
- Differentiated tasks that are adapted to meet the needs of pupils
- Additional adult support to ensure pupils' diverse needs are met
- Suitable resources that support learning and allow full participation in lessons

Planning for pupils with SEND is included within the class teacher's class plan. Brief notes are included in the lesson plans on the learning objectives, and approaches that will be used to remove barriers are highlighted. In addition, any personal targets for pupils should inform this planning. At times it may be appropriate to plan smaller steps to achieve the learning goal or provide additional resources. Support available can be requested through the SENCo or teaching assistant.

Questioning should take special consideration when planning. Teachers should plan questions for different groups and individuals to check understanding. Some pupils with SEND will show their understanding in different ways from their peers, so teachers and teaching assistants should look for a range of opportunities for pupils to demonstrate what they know and can do.

Children who have a particular weakness in maths will be identified through teacher assessment. They will be brought to the attention of the SLT and the SENCo and extra provision will be made for them through altered planning or additional support within the maths lesson.

When assessing pupils with SEND, teachers plan carefully the tasks or assessments given to pupils so they are given every opportunity to demonstrate what they know and are able to do. Alternate White Rose assessments may be given as well as opportunities to use manipulatives or the support of a teaching assistant may be used if necessary.

Monitoring:

Monitoring in maths continually takes place throughout the school year. Regular communication between the maths subject lead and teachers takes place where AfL is shared, which in turn aids planning. Regular learning walks and lesson observations take place. Pupil voice and book checks are used every term, sometimes half-termly, with a clear focus for each monitoring session (see maths action plan). Feedback is given to teachers about how they can strengthen their practice. Analysis of end-of-term assessments as well as teacher assessments are used to guide future planning and interventions.

CPD opportunities are given where they would be deemed valuable. These might take the shape of inputs during staff meetings or courses run by external training providers e.g. NW3 Maths Hub.

Maths learning with SEND pupils is monitored regularly with an audit into 'Maintaining an inclusive learning environment' being carried out termly. The success of SEN interventions is

monitored half-termly by the maths subject lead and SENCo. This helps to inform the future planning of SEN intervention work.

Parents & Homework:

In EYFS/Key Stage 1, homework is generally of a practical nature and is given to children to consolidate learning, as and when appropriate.

In Key Stage 2, children are set weekly homework tasks. These may extend or reinforce learning, or provide opportunities for consolidation of various areas of maths.

All children are encouraged to practise and learn number bonds and times tables through Num Bots/Times Tables Rock Stars.

How do we know our children have made progress?

Maths Progression Ladder: Number and Place Value

COUNTING						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Count reliably from 0 – 20, place them in order and say which is one more or one less than a given number	count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number			count backwards through zero to include negative numbers	interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero	use negative numbers in context, and calculate intervals across zero
	count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens	count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward	count from 0 in multiples of 4, 8, 50 and 100;	count in multiples of 6, 7, 9, 25 and 1000	count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000	
given a number between 0 -20, identify one more and one less	given a number, identify one more and one less		find 10 or 100 more or less than a given number	find 1000 more or less than a given number		
COMPARING NUMBERS						
Use language of more and fewer to compare objects	use the language of: equal to, more than, less than (fewer), most, least	compare and order numbers from 0 up to 100; use <, > and = signs	compare and order numbers up to 1000	order and compare numbers beyond 1000 *compare numbers with the same number of decimal places up to two decimal places* (copied from Fractions)	read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers)	read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers)
IDENTIFYING, REPRESENTING AND ESTIMATING NUMBERS						
	identify and represent numbers using objects and pictorial representations including the number line	identify, represent and estimate numbers using different representations, including the number line	identify, represent and estimate numbers using different representations	identify, represent and estimate numbers using different representations		

READING AND WRITING NUMBERS (including Roman Numerals)					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
read and write numbers from 1 to 20 in numerals and words.	Read and write numbers to at least 100 in numerals and in words	read and write numbers up to 1000 in numerals and in words		read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (appears also in Comparing Numbers)	read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Understanding Place Value)
		tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks (copied from Measurement)	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.	Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.	
UNDERSTANDING PLACE VALUE					
	recognise the place value of each digit in a two-digit number (tens, ones)	recognise the place value of each digit in a three-digit number (hundreds, tens, ones)	recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)	read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers)	read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers)
			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 (copied from Fractions)	*recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents* (copied from Fractions)	*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* (copied from Fractions)

ROUNDING					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			round any number to the nearest 10, 100 or 1 000	round any number up to 1 000 000 to the nearest 10, 100, 1 000, 10 000 and 100 000	round any whole number to a required degree of accuracy
			round decimals with one decimal place to the nearest whole number (copied from Fractions)	*round decimals with two decimal places to the nearest whole number and to one decimal place* (copied from Fractions)	*solve problems which require answers to be rounded to specified degrees of accuracy* (copied from Fractions)
PROBLEM SOLVING					
	use place value and number facts to solve problems	solve number problems and practical problems involving these ideas.	Solve number and practical problems that involve all of the above and with increasingly large positive numbers	solve number problems and practical problems that involve all of the above	solve number and practical problems that involve all of the above

Maths Progression Ladder: Addition and Subtraction

NUMBER BONDS						
Year 1		Year 2	Year 3	Year 4	Year 5	Year 6
	represent and use number bonds and related subtraction facts within 20	recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100				
MENTAL CALCULATION						
Using quantities and objects, they can add and subtract two single-digit numbers and count on and back to find an answer	add and subtract one-digit and two-digit numbers to 20, including zero	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	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 mentally with increasingly large numbers	perform mental calculations, including with mixed operations and large numbers
	read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Written Methods)	show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot				use their knowledge of the order of operations to carry out calculations involving the four operations

WRITTEN METHODS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Mental Calculation)		add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction	add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate	add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)	
INVERSE OPERATIONS, ESTIMATING AND CHECKING ANSWERS					
	recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	Estimate the answer to a calculation and use inverse operations to check answers	estimate and use inverse operations to check answers to a calculation	use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy	use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.

PROBLEM SOLVING						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Can solve problems, including doubling, halving and sharing	solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = □ - 9	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 problems, including missing number problems, using number facts, place value, and more complex addition and subtraction	solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why	solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
		solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change (copied from Measurement)				Solve problems involving addition, subtraction, multiplication and division

Maths Progression Ladder: Multiplication and Division

MULTIPLICATION & DIVISION FACTS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
count in multiples of twos, fives and tens (copied from Number and Place Value)	*count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward* (copied from Number and Place Value)	*count from 0 in multiples of 4, 8, 50 and 100* (copied from Number and Place Value)	*count in multiples of 6, 7, 9, 25 and 1 000* (copied from Number and Place Value)	*count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000* (copied from Number and Place Value)	
	recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers	recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables	recall multiplication and division facts for multiplication tables up to 12 × 12		
MENTAL CALCULATION					
		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 (appears also in Written Methods)	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	multiply and divide numbers mentally drawing upon known facts	perform mental calculations, including with mixed operations and large numbers
	show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot		recognise and use factor pairs and commutativity in mental calculations (appears also in Properties of Numbers)	multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	*associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $^3/_8$)* (copied from Fractions)

WRITTEN CALCULATION					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	calculate mathematical statements for	write and calculate mathematical	multiply two-digit and three-digit	multiply numbers up to 4 digits by a one- or	multiply multi-digit numbers up to 4 digits by a two-digit whole number

	multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs	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 (appears also in Mental Methods)	numbers by a one-digit number using formal written layout	two-digit number using a formal written method, including long multiplication for two-digit numbers	using the formal written method of long multiplication
				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	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 (copied from Fractions (including decimals))

PROPERTIES OF NUMBERS: MULTIPLES, FACTORS, PRIMES, SQUARE AND CUBE NUMBERS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			recognise and use factor pairs and commutativity in mental calculations (repeated)	identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.	Identify common factors, common multiples and prime numbers
				know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers	*use common factors to simplify fractions; use common multiples to express fractions in the same denomination* (copied from Fractions)
				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})	*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* (copied from Measures)

ORDER OF OPERATIONS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
					use their knowledge of the order of operations to carry out calculations involving the four operations
INVERSE OPERATIONS, ESTIMATING AND CHECKING ANSWERS					
		estimate the answer to a calculation and use inverse operations to check answers (copied from Addition and Subtraction)	*estimate and use inverse operations to check answers to a calculation* (copied from Addition and Subtraction)		use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy

PROBLEM SOLVING						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Can solve problems, including doubling and halving	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	solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	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	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	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
					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	*solve problems involving similar shapes where the scale factor is known or can be found* (copied from Ratio and Proportion)

Maths Progression Ladder: Number – Fractions including decimals and percentages

COUNTING IN FRACTIONAL STEPS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Pupils should count in fractions up to 10, starting from any number and using the1/2 and 2/4 equivalence on the number line (Non Statutory Guidance)	count up and down in tenths	count up and down in hundredths		
RECOGNISING FRACTIONS					
recognise, find and name a half as one of two equal parts of an object, shape or quantity	recognise, find, name and write fractions $^{1}/_{3}$, $^{1}/_{4}$, $^{2}/_{4}$ and $^{3}/_{4}$ of a length, shape, set of objects or quantity	recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators	recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten	recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents (appears also in Equivalence)	
		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 name a quarter as one of four equal parts of an object, shape or quantity		recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators			
COMPARING FRACTIONS					
		compare and order unit fractions, and fractions with the same denominators		compare and order fractions whose denominators are all multiples of the same number	compare and order fractions, including fractions >1

COMPARING DECIMALS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			compare numbers with the same number of decimal places up to two decimal places	read, write, order and compare numbers with up to three decimal places	identify the value of each digit in numbers given to three decimal places
ROUNDING INCLUDING DECIMALS					
			round decimals with one decimal place to the nearest whole number	round decimals with two decimal places to the nearest whole number and to one decimal place	solve problems which require answers to be rounded to specified degrees of accuracy
EQUIVALENCE (INCLUDING FRACTIONS, DECIMALS AND PERCENTAGES)					
	write simple fractions e.g. $^1/_2$ of 6 = 3 and recognise the equivalence of $^2/_4$ and $^1/_2$.	Recognise and show, using diagrams, equivalent fractions with small denominators	recognise and show, using diagrams, families of common equivalent fractions	identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths	use common factors to simplify fractions; use common multiples to express fractions in the same denomination
			recognise and write decimal equivalents of any number of tenths or hundredths	read and write decimal numbers as fractions (e.g. 0.71 = $^{71}/_{100}$) recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents	associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $^3/_8$)
			recognise and write decimal equivalents to $^1/_4$; $^1/_2$; $^3/_4$	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	recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.

ADDITION AND SUBTRACTION OF FRACTIONS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		add and subtract fractions with the same denominator within one whole (e.g. $^5/_7 + ^1/_7 = ^6/_7$)	add and subtract fractions with the same denominator	add and subtract fractions with the same denominator and multiples of the same number recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number (e.g. $^2/_5 + ^4/_5 = ^6/_5 = 1^1/_5$)	add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions
MULTIPLICATION AND DIVISION OF FRACTIONS					
				multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams	multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. $^1/_4 \times ^1/_2 = ^1/_8$) multiply one-digit numbers with up to two decimal places by whole numbers
					divide proper fractions by whole numbers (e.g. $^1/_3 \div 2 = ^1/_6$)
MULTIPLICATION AND DIVISION OF DECIMALS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
					multiply one-digit numbers with up to two decimal places by whole numbers

			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		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
PROBLEM SOLVING					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		solve problems that involve all of the above	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 problems involving numbers up to three decimal places	
			solve simple measure and money problems involving fractions and decimals to two 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.	

Maths Progression Ladder: Ratio and Proportion

Statements only appear in Year 6 but should be connected to previous learning, particularly fractions and multiplication and division					
					Year 6
					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.

Maths Progression Ladder: Measurement

COMPARING AND ESTIMATING						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
* use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects to solve problems	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] capacity and volume [e.g. full/empty, more than, less than, half, half full, quarter] * time [e.g. quicker, slower, earlier, later]	compare and order lengths, mass, volume/capacity and record the results using >, < and =		estimate, compare and calculate different measures, including money in pounds and pence (also included in Measuring)	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 (also included in measuring) Estimate volume (e.g. using 1 cm^3 blocks to build cubes and cuboids) and capacity (e.g. using water)	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.
	sequence events in chronological order using language [e.g. before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]	compare and sequence intervals of 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)			

MEASURING and CALCULATING					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
measure and begin to record the following: * **lengths and heights** * **mass/weight** * **capacity and volume** * **time** (hours, minutes, seconds)	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	measure, compare, add and subtract: **lengths** (m/cm/mm); **mass** (kg/g); **volume/capacity** (l/ml)	estimate, compare and calculate **different measures,** including **money in pounds and pence** (appears also in Comparing)	use all four operations to solve problems involving measure (e.g. **length, mass, volume, money**) using decimal notation including scaling.	Solve problems involving the calculation and conversion of **units of measure**, using decimal notation up to three decimal places where appropriate (appears also in Converting)
		measure the **perimeter** of simple 2-D shapes	measure and calculate the **perimeter** of a rectilinear figure (including squares) in centimetres and metres	measure and calculate the **perimeter** of composite rectilinear shapes in centimetres and metres	recognise that shapes with the same areas can have different **perimeters** and vice versa

MEASURING and CALCULATING						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
recognise, create and describe patterns	recognise and know the value of different denominations of **coins and notes**	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	add and subtract amounts of **money** to give change, using both £ and p in practical contexts			
				find the area of rectilinear shapes by counting squares	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 *recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})* (copied from Multiplication and Division)	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

TELLING THE TIME					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.	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.	Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks	read, write and convert time between analogue and digital 12 and 24-hour clocks (appears also in Converting)		
recognise and use language relating to dates, including days of the week, weeks, months and years	know the number of minutes in an hour and the number of hours in a day. (appears also in Converting)	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 Comparing and Estimating)			
			solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days (appears also in Converting)	solve problems involving converting between units of time	

CONVERTING					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	know the number of minutes in an hour and the number of hours in a day. (appears also in Telling the Time)	know the number of seconds in a minute and the number of days in each month, year and leap year	convert between different units of measure (e.g. kilometre to metre; hour to minute)	convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)	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
			read, write and convert time between analogue and digital 12 and 24-hour clocks (appears also in Converting)	solve problems involving converting between units of time	solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate (appears also in Measuring and Calculating)
			solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days (appears also in Telling the Time)	understand and use equivalences between metric units and common imperial units such as inches, pounds and pints	convert between miles and kilometres

Maths Progression Ladder: Geometry – Properties of Shapes

IDENTIFYING SHAPES AND THIER PROPERTIES					
Year 1		Year 2	Year 3	Year 4	Year 5	Year 6
* explore characteristics of everyday objects and shapes and use mathematical language to describe them.	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].	Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line		identify lines of symmetry in 2-D shapes presented in different orientations	identify 3-D shapes, including cubes and other cuboids, from 2-D representations	recognise, describe and build simple 3-D shapes, including making nets (appears also in Drawing and Constructing)
		identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces				illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
		identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]				
DRAWING AND CONSTRUCTING						
			draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them	complete a simple symmetric figure with respect to a specific line of symmetry	draw given angles, and measure them in degrees (°)	draw 2-D shapes using given dimensions and angles
						recognise, describe and build simple 3-D shapes, including making nets (appears also in Identifying Shapes and Their Properties)
COMPARING AND CLASSIFYING						
Year 1	Year 2	Year 3	Year 4	Year 5		Year 6

	compare and sort common 2-D and 3-D shapes and everyday objects		compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes	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	compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons
ANGLES					
		recognise angles as a property of shape or a description of a turn		know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles	
		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 acute and obtuse angles and compare and order angles up to two right angles by size	identify: * angles at a point and one whole turn (total 360°) * angles at a point on a straight line and ½ a turn (total 180°) * other multiples of 90°	recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles
		identify horizontal and vertical lines and pairs of perpendicular and parallel lines			

Maths Progression Ladder: Geometry – Position and Direction

POSITION, DIRECTION AND MOVEMENT					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
describe position, direction and movement, including half, quarter and three-quarter turns.	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)		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	identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed	describe positions on the full coordinate grid (all four quadrants) draw and translate simple shapes on the coordinate plane, and reflect them in the axes.
			Plot specified points and draw sides to complete a given polygon		
PATTERN					
	order and arrange combinations of mathematical objects in patterns and sequences				

Maths Progression Ladder: Statistics

INTERPRETING, CONSTRUCTING AND PRESENTING DATA					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	interpret and construct simple pictograms, tally charts, block diagrams and simple tables	interpret and present data using bar charts, pictograms and tables	interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs	complete, read and interpret information in tables, including timetables	interpret and construct pie charts and line graphs and use these to solve problems
	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				
SOLVING PROBLEMS					
		solve one-step and two-step questions [e.g. 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.	Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.	Solve comparison, sum and difference problems using information presented in a line graph	calculate and interpret the mean as an average

Maths Progression Ladder: Algebra

EQUATIONS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and ***missing number problems*** *such as* $7 = \square - 9$ (copied from Addition and Subtraction)	*recognise and use the inverse relationship between addition and subtraction and use this to check calculations and* ***missing number*** *problems.* (copied from Addition and Subtraction)	solve problems, *including* ***missing number*** *problems, using number facts, place value, and more complex addition and subtraction.* (copied from Addition and Subtraction) *solve problems, including* ***missing number*** *problems, involving multiplication and division, including integer scaling* (copied from Multiplication and Division)		*use the properties of rectangles to deduce related facts and find* ***missing lengths and angles*** (copied from Geometry: Properties of Shapes)	express missing number problems algebraically
	recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 (copied from Addition and Subtraction)				find pairs of numbers that satisfy number sentences involving two unknowns
represent and use number bonds and related subtraction facts within 20 (copied from Addition and Subtraction)					enumerate all possibilities of combinations of two variables