Mathematics Scheme of Work & Skills and Knowledge Progression

Key Stage 1 and Key Stage 2

The INTENT of our Maths Curriculum

Maths Statement of Intent

At St Meryl school we want children to leave us at the end of Year 6 with a positive attitude towards their mathematics learning. We want all children to feel that they can achieve in maths. We aim to provide a high-quality maths curriculum that is both challenging and enjoyable. There is no glass ceiling put on the children in their maths learning. By the end of Year 6 children at St Meryl will be equipped with a range of mental, written and calculator methods that they understand and can use correctly.

Aims of Maths Curriculum

- Become **fluent** in the fundamentals of mathematics so that they develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- Be able to **solve problems** by applying their mathematics to a variety of problems with increasing sophistication, including in unfamiliar contexts and to model real-life scenarios.
- **Reason mathematically** by following a line of enquiry and develop and present a justification, argument or proof using mathematical language.
- Have an appreciation of number and number operations, which enables mental calculations and written procedures to be performed efficiently, fluently and accurately to be successful in mathematics.

National Curriculum Programmes of Study:

https://www.gov.uk/government/publications/national-curriculum-in-england-mathematics-programmes-of-study/national-curriculum-in-england-mathematics-programmes-of-study

Implementation: St Meryl School Maths HFL Essentials Scheme of Work and Planning

At St Meryl we have decided to use the planning scheme ESSENTIALmaths written by HfL.

Planning

1. **Long term**: National Curriculum Year group on a page by Herts Essentials.
2. **Medium term:** Termly overviews by Herts Essentials Plan
3. **Short term:**
    - Sequences of learning broken down into steps supported by Essentials.
    - Daily fluency sessions as part of maths lessons based on Herts Mental Maths Progression.

Year 1

Term 1		
Week one	1LS1	Geometry – Positional Language Including Ordinal Numbers
Week two	1LS2	Numbers to Ten – Finding Patterns in Numbers (including subitising)
	1LS3	Numbers to Ten – Counting and Comparison (more, less, fewer)
Week three	1LS4	Numbers to Ten – Estimating and Ordering
	1LS5	Numbers to Ten – Regrouping the Whole
Week four - five	1LS6	Numbers to Ten – Part Whole Addition and Subtraction
Week six - seven	1LS7	Numbers to Ten – Solving Problems Using Part or Whole Unknown
	1LS8	Numbers to Ten – Comparison
Week eight	1LS9	Numbers to Ten – Equality and Balance
Week nine - ten	1LS10	Numbers to Twenty – Making 10 and Some More
	1LS11	Numbers to 20 – Estimating and Ordering, 1 More and 1 Less
Week eleven	1LS12	Numbers to Twenty – Doubling and Halving
	1LS13	Numbers to Twenty – Odd and Even Numbers
Week twelve	1LS14	Geometry – Names and Properties of 2-D and 3-D Shape

Term 2		
Week one - two	1LS15	Measures – The Language of Comparing Length, Height, Mass and Speed
	1LS16	Sequencing Events – Days of the Week and Months of the Year
Week three - four	1LS17	Numbers to Twenty – Adding using 'Think 10'
	1LS18	Numbers to Twenty – Subtraction using 'Think 10'
Week five	1LS19	Numbers to Twenty – Equality and Balance
	1LS20	Numbers to Twenty – Part or Whole Unknown
Week six - seven	1LS21	Numbers to Twenty – Language and Problem Solving (part or whole unknown)
	1LS22	Numbers to Twenty – Comparison (difference, more, less, fewer) including Statistics
Week eight	1LS23	Measures – Coins and Combinations to 20p, Ordering and Comparing
Week nine	1LS24	Counting in 2s, 5s 10s
Week ten	1LS25	Measures – Non-standard Measures and Introducing Simple Standard Measures

Term 3		
Week one - two	1LS26	Multiplication and Division – Equal or Unequal Groups and Remainders
	1LS27	Multiplication – Repeated Addition and Arrays (number of groups and size of group)
	1LS28	Multiplication – Problem Solving (identifying the number of groups and size of the group)
Week three	1LS29	Multiplication – Scaling and Counting in 2s to 24
Week four	1LS30	Division – Sharing and Grouping Problems
Week five	1LS31	Time – Telling the Time, O'clock and Half Past
Week six	1LS32	Fractions – Sharing Into Equal Groups
Week seven	1LS33	Fractions – Equal or Unequal Parts of Shapes
Week eight	1LS34	Fractions – Of Continuous Quantities Including Capacity
Week nine	1LS35	Numbers to Twenty – Review
Week ten - twelve	1LS36	Numbers to One Hundred – Place Value and Digits, Making Tens and Some More
	1LS37	Place Value – Estimation, Ordering and Comparison
Remaining weeks should be review and close the gap sessions focusing upon high value learning		

Year 2

Term 1		
Week one - two	2LS1	Securing Fluency to Twenty
Week three - four	2LS2	Place Value – Making Tens and Some More
	2LS3	Place Value and Regrouping Two-Digit Numbers
	2LS4	Counting On and Back in Ones and Tens from any Number
Week five	2LS5	Representing, Ordering and Comparing Numbers to 100 and Quantities for Measures
	2LS6	Estimation and Magnitude
Week six - seven	2LS7	Numbers to 20 – Mental Addition and Subtraction
	2LS8	Finding Complements of 10 and 100 Including Measures
Week eight - nine	2LS9	Add and Subtract Numbers Mentally Using 1- and 2-Digit Numbers
Week ten	2LS10	Finding Part or Whole Unknown
Week eleven - twelve	2LS11	Money – Making Combinations and Finding Change
	2LS12	Comparison (difference, more, less, fewer)
	2LS13	Measures – Estimation and Measure Using Different Scales

Term 2		
Week one	2LS14	Statistics – Totalling and Comparing Amounts in Block Graphs, Pictograms, Tables and Tally Charts
Week two - three	2LS15	Written Addition Method
	2LS16	Commutativity in Addition but not in Subtraction
	2LS17	Written Subtraction Method
Week four	2LS18	Problem Solving with Addition and Subtraction in a Range of Contexts
Week five	2LS19	Time – Telling the Time: O'clock, Half Past, Quarter Past and Quarter To
	2LS20	Time – Estimating, Ordering and Comparing Time
Week six	2LS21	Double and Halve One and Two-digit Numbers and Amounts of Money
	2LS22	Times Tables – 2s, 5s and 10s. Patterns and Strategy (counting in 3s)
Week seven - eight	2LS23	Multiplication – Multiples and Repeated Addition
	2LS24	Multiplication – Number of Groups, Group Size and Product
	2LS25	Multiplication Problem Solving
Week nine - ten	2LS26	Division – Sharing and Grouping
	2LS27	Division – Sharing and Grouping Problems including Remainders

Term 3		
Week one - two	2LS28	Fractions – Finding Halves, Quarters and Thirds of Amounts
	2LS29	Fractions – Finding Halves, Quarters and Thirds of Shapes
	2LS30	Fractions – Finding Three-Quarters of Shapes and Amounts
Week three - four	2LS31	Fractions – Equivalence
	2LS32	Fractions – of Continuous Quantities
Week five	2LS33	Time – Telling the Time to the Nearest 5 Minutes
Week six - seven	2LS34	Problem Solving for all Operations (including Fractions)
Week eight	2LS35	Multiplication and Division – Equality and Balance
Week nine	2LS36	Geometry – Properties of 2-D and 3-D Shape, Classifying and Sorting
	2LS37	Geometry – Symmetry
Week ten	2LS38	Mental Calculation Review
Week eleven	2LS39	Geometry – Sequencing
	2LS40	Geometry – Rotation and Right Angles
Week twelve	2LS41	Place Value and Written Calculation Review
Remaining weeks should be review and close the gap sessions focusing upon high value learning		

Year 3

Term 1		
Week one	3LS1	Place Value and Regrouping
	3LS2	Counting On and Back in Ones, Tens and Hundreds
Week two	3LS3	Estimation, Magnitude and Rounding
	3LS4	Measures – Comparison, Estimation and Magnitude
Week three - five	3LS5	Mental Fluency – Addition
	3LS6	Mental Fluency – Subtraction
	3LS7	Fact Families and Applying the Inverse
Week six	3LS8	Written Addition
Week seven	3LS9	Written Subtraction
Week eight	3LS10	Problem Solving – Worded Problems
Week nine	3LS11	Statistics – Interpreting Bar Charts and Tables
Week ten	3LS12	Angles, Right Angles and Estimation
	3LS13	Perpendicular and Parallel Lines, Vertical and Horizontal Lines
Week eleven	3LS14	2-D Shape – Properties and Drawing
Week twelve	3LS15	Perimeter Including Problem Solving Using Written and Mental Methods

Term 2		
Week one - two	3LS16	Multiplication – 3, 4 and 8 Times Tables including Counting
	3LS17	Division – 1, 2, 3, 5, 4 and 8 Times Tables
	3LS18	Multiplication – Strategy, Associative and Distributive Laws
Week three	3LS19	Statistics – Pictograms and Scaled Bar Charts
Week four	3LS20	Multiplication and Division Worded Problems
Week five	3LS21	Fractions – Finding Fractions of Discrete and Continuous Quantities
Week six - eight	3LS22	Ordering and Comparing Fractions
	3LS23	Adding and Subtracting Fractions with the Same Denominators
	3LS24	Fractions – Problem Solving with Unit and Non-Unit Fractions
Week nine - ten	3LS25	Multiplication – Multiplying Multiples of Ten
	3LS26	Multiplication – Formal Written Multiplication

Term 3		
Week one	3LS27	Division Problem Solving – Sharing and Grouping
Week two	3LS28	Division – Two and Three-Digit Numbers by One-Digit Numbers including Halving
Week three	3LS29	Multiplication, Division and Fractions – Scaling and Correspondence Problems
Week four	3LS30	Division – Long Division
Week five - six	3LS31	Time – Hours, Minutes, Seconds, Days, Weeks, Months, Years
	3LS32	Time – Telling the Time (Analogue and Digital) and Estimation
	3LS33	Time – Duration
Week seven - eight	3LS34	Securing the Four Operations with Whole Number including Problem Solving
Week nine - ten	3LS35	Place Value and Decimals – Ten Times Greater and Ten Times Smaller
	3LS36	Place Value and Decimals – Regrouping
	3LS37	Place Value and Decimals – Estimation, Comparing and Rounding
Week eleven	3LS38	Measures – Measuring and Problem Solving
Week twelve	3LS39	3-D Shape – Building and Identifying Properties
Remaining weeks should be review and close the gap sessions focusing upon high value learning – place value, mental and written fluency		

Year 4

Term 1		
Week one	4LS1 4LS2	Place Value – Order and Compare Numbers Beyond 1000 Rounding, Estimation and Magnitude
Week two	4LS3	Securing Addition and Subtraction Mental Fluency
Week three	4LS4	Securing Formal Written Addition and Subtraction Fluency
Week four - five	4LS5 4LS6	Counting in Multiples of 6, 7, 9, 25 and 1000 Multiplication and Division Facts (Times Tables)
Week six	4LS7	Factor Pairs, Integer Scaling and Correspondence Problems
Week seven	4LS8	Problem Solving Including Measures to Apply Place Value, Mental Strategies and Arithmetic Laws
Week eight - ten	4LS9 4LS10 4LS11	Multiply and Divide a One or Two-digit Number by 10 and 100 Measure – Conversion of Units Measures – Compare, Estimate and Calculate
Week eleven	4LS12	Discrete and Continuous Data (Time Graphs), Including Application of Scales and Division
Week twelve	4LS13	Perimeter

Term 2		
Week one	4LS14 4LS15	Properties of Shape Symmetry
Week two - three	4LS16 4LS17	Decimal Numbers Calculating With Decimals
Week four	4LS18 4LS19	Measure – Money Problem Solving involving Decimals to Two Decimal Places
Week five - six	4LS20 4LS21 4LS22	Add and Subtract Fractions with the Same Denominator Finding Fractions of Quantities Fractions in the Context of Measure
Week seven	4LS23	Equivalent Fractions, Ordering and Comparing
Week eight - ten	4LS24 4LS25	Multiply Two and Three-digit Numbers by a One-digit Number Using a Formal Written Layout Divide Two and Three-digit Numbers by a One-digit Number Using a Formal Written Layout

Term 3		
Week one	4LS26	Time – Read, Write Calculate and Convert Time on Analogue and Digital 12- and 24-Hour Clocks
Week two	4LS27	Statistics – Interpret and Present Continuous and Discrete Data, Solve Problems incorporating Measures
Week three	4LS28 4LS29	Roman Numerals to 100 and Zero Negative Numbers – Counting through Zero and Calculating in Context
Week four	4LS30 4LS31	Geometry – Angles Geometry – Properties of Triangles
Week five	4LS32 4LS33	Geometry – Coordinates in the First Quadrant and Translations Geometry – Position and Direction, incorporating Angles and Plotting Points of a Shape
Week six - seven	4LS34	Multiplication and Division Review
Week eight	4LS35	Area
Week nine	4LS36	Fractions Review
Week ten - twelve	4LS37	Application and Problem Solving – Developing Operation Sense
Remaining weeks should be review and close the gap sessions focusing upon high value learning		

Year 5

Term 1		
Week one - two	5LS1 5LS2	Place Value and Rounding of Large Numbers Interpret Negative Numbers
Week three	5LS3	Place Value of Numbers with up to Three Decimal Places
Week four - five	5LS4 5LS5 5LS6	Multiply and Divide by 10, 100 and 1,000 Properties of Number – Multiples, Factors and Common Factors Prime and Composite Numbers
Week six	5LS7 5LS8	Multiply and Divide Mentally Solve Problems Involving Knowledge of Key Facts
Week seven	5LS9	Add and Subtract Using a Range of Strategies
Week eight	5L10	Add and Subtract Using Formal Written Methods
Week nine	5LS11	Formal Written Method for Multiplication
Week ten	5LS12	Formal Written Method of Short Division
Week eleven - twelve	5LS13 5LS14 5LS15	Equivalent Fractions Compare and Order Fractions Adding and Subtracting Fractions

Term 2		
Week one	5LS16	Problem Solving – All Four Operations
Week two	5LS17 5LS18	Multiply Fractions by Whole Numbers Fraction Problem Solving
Week three	5LS19	Measure – Converting Units of Measure
Week four - five	5LS20 5LS21	Area Volume and Capacity
Week six - seven	5LS22 5LS23	Percentages Problem Solving – Percentages
Week eight	5LS24 5LS25	3-D Shapes from 2-D Representations Reflection and Translation
Week nine - ten	5LS26 5LS27 5LS28	Perimeter Estimate, Compare, Measure and Draw Angles Identify Unknown Angles

Term 3		
Week one - two	5LS29 5LS30	Formal Methods for Division and Multiplication in Increasingly Complex Problems Strategies for Multiplication and Division (Mental and Written)
Week three	5LS31	Solving Problems involving Scaling by Simple Fractions and Rates
Week four	5LS32	Conversion of Imperial and Metric Units of Measure
Week five	5LS33	Fractions, Decimals and Percentages Problem Solving
Week six	5LS34	Reading Timetables and Calculating with Time
Week seven	5LS35	Solve Problems involving the Four Operations
Week eight - nine	5LS36 5LS37	Distinguish between Regular and Irregular Polygons Use Properties of Rectangles
Week ten	5LS38	Statistics – Solve Comparison, Sum and Difference Problems using Information in a Line Graph
Week eleven	5LS39	Statistics – Interpreting and Evaluating Information Presented in Charts and Tables
Week twelve	5LS40	Roman Numerals
Remaining weeks should be review and close the gap sessions focusing upon high value learning		

Year 6

Term 1		
Week one - two	6LS1 6LS2	Place Value Multiply and Divide by 10, 100 and 1,000
Week three	6LS3	Choosing Effective Mental Calculation Strategies
Week four	6LS4 6LS5	Problem Solving with Four Operations Application of Factors, Multiples and Primes
Week five - seven	6LS6 6LS7 6LS8	Equivalent Fractions Comparing and Ordering Fractions Adding and Subtracting Fractions
Week eight	6LS9 6LS10 6LS11	Fraction and Decimal Equivalents Fractions, Decimals and Percentages Calculating Percentages
Week nine	6LS12	Formal Written Method of Multiplication
Week ten	6LS13	Area of Parallelograms and Triangles
Week eleven	6LS14	Formal Written Method of Short Division
Week twelve	6LS15	Properties of Shape

Term 2		
Week one	6LS16	Order of Operations and Algebra
Week two	6LS17	Formal Written Method for Long Division
Week three	6LS18	Exploring Relationships Between Perimeter and Area
Week four	6LS19 6LS20	Recognise and Find Angles Reflection and Translation
Week five - six	6LS21 6LS22 6LS23	Multiplying Fractions Dividing Fractions Fraction Problem Solving
Week seven	6LS24	Ratio and Proportion
Week eight	6LS25 6LS26	Volume Measures
Week nine	6LS27	Statistics – Interpret Line Graphs and Pie Charts
Week ten	6LS28	Algebra and Sequences

Term 3		
Week one	6LS29 6LS30	Statistics – Calculate and Interpret Mean Average Application of Previous Years' Learning
Week two	6LS31	Application of Known Facts and Calculation Strategies
Any remaining time before SATs should be used to consolidate key learning		
Post SATs 1	6LS32	Constructing Pie Charts
Post SATs 2	6LS33	Statistical Representations
Post SATs 3	6LS34	Further Algebra
Post SATs 4	6LS35	Financial Maths and Enterprise
Post SATs 5	6LS36	Maths Preparation for KS3

Maths Progression of Skills and Knowledge

	Number And Place Value	Addition and Subtraction	Multiplication and Division	Fractions	Measurements	Algebra	Ratio and Proportion	Geometry	Statistics
Y1 Statutory	count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens given a number, identify one more and one less identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least	read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs represent and use number bonds and related subtraction facts within 20 add and subtract onedigit and two-digit numbers to 20, including zero solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number	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	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	compare, describe and solve practical problems for: - lengths and heights (for example, long/short, longer/shorter, tall/short, double/half) - mass / weight (for example, heavy/light, heavier than, lighter than) - capacity and volume (full/empty, more than, less than, half, half full, quarter) - time (quicker, slower, earlier, later) measure and begin to record the following: - lengths and heights - mass/weight - capacity and volume - time			recognise and name common 2-D and 3-D shapes, including: - 2-D shapes [for example, rectangles (including squares), circles and triangles] 3-D shapes [for example, cuboids (including cubes), pyramids an describe position, direction and movement, including whole, half, quarter and three-quarter turns	

	read and write numbers from 1 to 20 in numerals and words	problems such as 7 = □ - 9			(hours, minutes, seconds) recognise and know the value of different denominations of coins and notes sequence events in chronological order using language (for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening) recognise and use language relating to dates, including days of the week, weeks, months and years tell the time to the hour and half past the hour and draw the hands on a clock face to show these times				

Y1 Non-Statutory	Pupils practise counting (1, 2, 3…), ordering (for example, first, second, third…), or to indicate a quantity (for example, 3 apples, 2 centimetres), including solving simple concrete problems, until they are fluent. Pupils begin to recognise place value in numbers beyond 20 by reading, writing, counting and comparing numbers up to 100, supported by objects and pictorial representations. They practise counting as reciting numbers and counting as enumerating objects, and counting in twos, fives and tens from different multiples to	Pupils memorise and reason with number bonds to 10 and 20 in several forms (for example, 9 + 7 = 16; 16 - 7 = 9; 7 = 16 - 9). They should realise the effect of adding or subtracting zero. This establishes addition and subtraction as related operations. Pupils combine and increase numbers, counting forwards and backwards. They discuss and solve problems in familiar practical contexts, including using quantities. Problems should include the terms: put together, add, altogether, total,	Through grouping and sharing small quantities, pupils begin to understand: multiplication and division; doubling numbers and quantities; and finding simple fractions of objects, numbers and quantities. They make connections between arrays, number patterns, and counting in twos, fives and tens.	Pupils are taught half and quarter as 'fractions of' discrete and continuous quantities by solving problems using shapes, objects and quantities. For example, they could recognise and find half a length, quantity, set of objects or shape. Pupils connect halves and quarters to the equal sharing and grouping of sets of objects and to measures, as well as recognising and combining halves and quarters as parts of a whole.	The pairs of terms: mass and weight, volume and capacity, are used interchangeably at this stage. Pupils move from using and comparing different types of quantities and measures using non-standard units, including discrete (for example, counting) and continuous (for example, liquid) measurement, to using manageable common standard units. In order to become familiar with standard measures, pupils begin to use measuring tools such as a ruler, weighing scales and containers. Pupils use the language of time, including telling			Pupils handle common 2-D and 3-D shapes, naming these and related everyday objects fluently. They recognise these shapes in different orientations and sizes, and know that rectangles, triangles, cuboids and pyramids are not always similar to each other. Pupils use the language of position, direction and motion, including: left and right, top, middle and bottom, on top of, in front of, above, between, around, near, close and far, up and down, forwards and backwards, inside and outside. Pupils make whole, half, quarter and threequarter turns in both directions and	

	develop their recognition of patterns in the number system (for example, odd and even numbers), including varied and frequent practice through increasingly complex questions. They recognise and create repeating patterns with objects and with shapes.	take away, distance between, difference between, more than and less than, so that pupils develop the concept of addition and subtraction and are enabled to use these operations flexibly.			the time throughout the day, first using o'clock and then half past.			connect turning clockwise with movement on a clock face.	
Y2 Statutory	count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward recognise the place value of each digit in a two-digit number (tens, ones) identify, represent and estimate numbers using different	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 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	recognise, find, name and write fractions 1 / 3 , 1 / 4 , 2 / 4 and 3 / 4 of a length, shape, set of objects or quantity write simple fractions for example, 1 / 2 of 6 = 3 and recognise the equivalence of 2 / 4 and 1 / 2 .	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			identify and describe the properties of 2-D shapes, including the number of sides and 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	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

	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	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 onedigit 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	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 p		compare and order lengths, mass, volume/capacity and record the results using >, < and = 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 compare and sequence intervals of time			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 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)	totalling and comparing categorical data

		relationship between addition and subtraction and use this to check calculations and missing number problems			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				
Y2 Non-Statutory	Using materials and a range of representations, pupils practise counting, reading, writing and comparing numbers to at least 100 and solving a variety of related problems to develop fluency. They count in multiples of three to support their later understanding of a third. As they become more confident with numbers up to 100, pupils are introduced	Pupils extend their understanding of the language of addition and subtraction to include sum and difference. Pupils practise addition and subtraction to 20 to become increasingly fluent in deriving facts such as using 3 + 7 = 10, 10 - 7 = 3 and 7 = 10 - 3 to calculate 30 + 70 = 100, 100 - 70 = 30 and 70 = 100 - 30. They check their calculations,	Pupils use a variety of language to describe multiplication and division. Pupils are introduced to the multiplication tables. They practise to become fluent in the 2, 5 and 10 multiplication tables and connect them to each other. They connect the 10 multiplication table to place value, and the 5 multiplication table to the	Pupils use fractions as 'fractions of' discrete and continuous quantities by solving problems using shapes, objects and quantities. They connect unit fractions to equal sharing and grouping, to numbers when they can be calculated, and to measures, finding fractions of lengths, quantities, set of objects or shapes. They meet 3 / 4 as the first example of	Pupils use standard units of measurement with increasing accuracy, using their knowledge of the number system. They use the appropriate language and record using standard abbreviations. Comparing measures includes simple multiples such as 'half as high'; 'twice as wide'. They become fluent in telling the time on			Pupils handle and name a wider variety of common 2-D and 3-D shapes including: quadrilaterals and polygons, and cuboids, prisms and cones, and identify the properties of each shape (for example, number of sides, number of faces). Pupils identify, compare and sort shapes on the basis of their properties and use vocabulary precisely, such as sides, edges,	Pupils record, interpret, collate, organise and compare information (for example, using many-to-one correspondence with simple ratios 2, 5, 10).

	to larger numbers to develop further their recognition of patterns within the number system and represent them in different ways, including spatial representations. Pupils should partition numbers in different ways (for example, 23 = 20 + 3 and 23 = 10+13) to support subtraction. They become fluent and apply their knowledge of numbers to reason with, discuss and solve problems that emphasise the value of each digit in two-digit numbers. They begin to understand zero as a place holder.	including by adding to check subtraction and adding numbers in a different order to check addition (for example, 5 + 2 + 1 = 1 + 5 + 2 = 1 + 2 + 5). This establishes commutativity and associativity of addition. Recording addition and subtraction in columns supports place value and prepares for formal written methods with larger numbers.	divisions on the clock face. They begin to use other multiplication tables and recall multiplication facts, including using related division facts to perform written and mental calculations. Pupils work with a range of materials and contexts in which multiplication and division relate to grouping and sharing discrete and continuous quantities, to arrays and to repeated addition. They begin to relate these to fractions and measures (for example, 40 ÷ 2 = 20, 20 is a half of 40). They use commutativity and inverse relations to	a nonunit fraction. Pupils should count in fractions up to 10, starting from any number and using the 1 / 2 and 2 / 4 equivalence on the number line (for example, 1 1 / 4 , 1 2 / 4 (or 1 1 / 2), 1 3 / 4 , 2). This reinforces the concept of fractions as numbers and that they can add up to more than one.	analogue clocks and recording it. Pupils become fluent in counting and recognising coins. They read and say amounts of money confidently and use the symbols £ and p accurately, recording pounds and pence separately			vertices and faces. Pupils read and write names for shapes that are appropriate for their word reading and spelling. Pupils draw lines and shapes using a straight edge. Pupils should work with patterns of shapes, including those in different orientations. Pupils use the concept and language of angles to describe 'turn' by applying rotations, including in practical contexts (for example, pupils themselves moving in turns, giving instructions to other pupils to do so, and programming robots using instructions given in right angles).	

			develop multiplicative reasoning (for example, 4×5=20 and 20÷5 =4).						
Y3 Statutory	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	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	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	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 nonunit fractions with small denominators recognise and show, using diagrams, equivalent fractions with	measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) measure the perimeter of simple 2-D shapes add and subtract amounts of money to give change, using both £ and p in practical contexts tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks Estimate and read time with increasing accuracy to the nearest minute; record and			draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them recognise that angles are 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	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

	problems involving	number facts, place value, and more complex addition and subtraction	positive integer scaling problems and correspondence problems in which n objects are connected to m objects	small denominators add and subtract fractions with the same denominator within one whole (for example, 5 / 7 + 1 / 7 = 6 / 7) compare add order unit fractions, and fractions with the same denominators solve problems that involve all of the above	compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight Know the number of seconds in a minute and the number of days in each month, year and leap year Compare durations of events [for example to calculate the time taken by particular events or tasks]			perpendicular and parallel lines	
Y3 Non-Statutory	Pupils now use multiples of 2, 3, 4, 5, 8, 10, 50 and 100. They use larger numbers to at least 1000, applying partitioning related to place value using varied and increasingly complex	Pupils practise solving varied addition and subtraction questions. For mental calculations with two digit numbers, the answers could exceed 100. Pupils use their understanding	Pupils continue to practise their mental recall of multiplication tables when they are calculating mathematical statements in order to improve fluency. Through doubling, they connect the 2, 4	Pupils connect tenths to place value, decimal measures and to division by 10. They begin to understand unit and non-unit fractions as numbers on the number line, and deduce relations between them,	Pupils continue to measure using the appropriate tools and units, progressing to using a wider range of measures, including comparing and using mixed units (for example, 1 kg and 200g) and simple			Pupils' knowledge of the properties of shapes is extended at this stage to symmetrical and nonsymmetrical polygons and polyhedra. Pupils extend their use of the properties of shapes. They	Pupils understand and use simple scales (for example, 2, 5, 10 units per cm) in pictograms and bar charts with increasing accuracy. They continue to interpret data

	problems, building on work in year 2 (for example, 146 = 100 and 40 and 6, 146 = 130 and 16). Using a variety of representations, including those related to measure, pupils continue to count in ones, tens and hundreds, so that they become fluent in the order and place value of numbers to 1000.	of place value and partitioning, and practise using columnar addition and subtraction with increasingly large numbers up to three digits to become fluent	and 8 multiplication tables. Pupils develop efficient mental methods, for example, using commutativity and associativity (for example, 4 × 12 × 5 = 4 × 5 × 12 = 20 × 12 = 240) and multiplication and division facts (for example, using 3 × 2 = 6, 6 ÷ 3 = 2 and 2 = 6 ÷ 3) to derive related facts (30 × 2 = 60, 60 ÷ 3 = 20 and 20 = 60 ÷ 3). Pupils develop reliable written methods for multiplication and division, starting with calculations of two-digit numbers by one-digit numbers and progressing to the formal written methods of short	such as size and equivalence. They should go beyond the [0, 1] interval, including relating this to measure. Pupils understand the relation between unit fractions as operators (fractions of), and division by integers. They continue to recognise fractions in the context of parts of a whole, numbers, measurements, a shape, and unit fractions as a division of a quantity. Pupils practise adding and subtracting fractions with the same denominator through a variety of increasingly complex	equivalents of mixed units (for example, 5m = 500cm). The comparison of measures should also include simple scaling by integers (for example, a given quantity or measure is twice as long or five times as high) and this connects to multiplication. Pupils continue to become fluent in recognising the value of coins, by adding and subtracting amounts, including mixed units, and giving change using manageable amounts. They record £ and p separately. The decimal recording of money is introduced formally in year 4.			should be able to describe the properties of 2-D and 3-D shapes using accurate language, including lengths of lines and acute and obtuse for angles greater or lesser than a right angle. Pupils connect decimals and rounding to drawing and measuring straight lines in centimetres, in a variety of contexts.	presented in many contexts.

			multiplication and division. Pupils solve simple problems in contexts, deciding which of the four operations to use and why. These include measuring and scaling contexts, (for example, four times as high, eight times as long etc.) and correspondence problems in which m objects are connected to n objects (for example, 3 hats and 4 coats, how many different outfits?; 12 sweets shared equally between 4 children; 4 cakes shared equally between 8 children).	problems to improve fluency.	Pupils use both analogue and digital 12-hour clocks and record their times. In this way they become fluent in and prepared for using digital 24-hour clocks in year 4.				
Y4 Statutory	count in multiples of 6, 7, 9, 25 and 1000 find 1000 more or less than a given number	add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and	recall multiplication and division facts for multiplication tables up to 12 × 12	recognise and show, using diagrams, families of common equivalent fractions	convert between different units of measure [for example, kilometre to metre; hour to minute]			compare and classify geometric shapes, including quadrilaterals and triangles, based on their	interpret and present discrete and continuous data using appropriate graphical methods,

	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	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	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 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	count up and down in hundredths; recognise that hundredths arise when dividing an object by a 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	measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres find the area of rectilinear shapes by counting squares estimate, compare and calculate different measures, including money in pounds and pence read, write and convert time between analogue and digital 12 and 24-hour clocks solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days			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 describe positions on a 2-D grid as coordinates in the first quadrant describe movements between positions as translations of a given unit to the left/right and up/down plot specified points and draw sides to complete a given polygon	including bar charts and time graphs solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs

	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		problems such as n objects are connected to m objects	recognise and write decimal equivalents to 1 / 4 ; 1 / 2 ; 3 / 4 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 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					

Y4 Non-Statutory	Using a variety of representations, including measures, pupils become fluent in the order and place value of numbers beyond 1000, including counting in tens and hundreds, and maintaining fluency in other multiples through varied and frequent practice. They begin to extend their knowledge of the number system to include the decimal numbers and fractions that they have met so far. They connect estimation and rounding numbers to the use of measuring instruments.	Pupils continue to practise both mental methods and columnar addition and subtraction with increasingly large numbers to aid fluency	Pupils continue to practise recalling and using multiplication tables and related division facts to aid fluency. Pupils practise mental methods and extend this to three-digit numbers to derive facts (for example 600 ÷ 3 = 200 can be derived from 2 x 3 = 6). Pupils practise to become fluent in the formal written method of short multiplication and short division with exact answers. Pupils write statements about the equality of expressions (for example, use the distributive law 39 × 7 = 30 × 7 +	Pupils should connect hundredths to tenths and place value and decimal measure. They extend the use of the number line to connect fractions, numbers and measures. Pupils understand the relation between non-unit fractions and multiplication and division of quantities, with particular emphasis on tenths and hundredths Pupils make connections between fractions of a length, of a shape and as a representation of one whole or set of quantities.	Pupils build on their understanding of place value and decimal notation to record metric measures, including money. They use multiplication to convert from larger to smaller units. Perimeter can be expressed algebraically as 2(a + b) where a and b are the dimensions in the same unit. They relate area to arrays and multiplication.			Pupils continue to classify shapes using geometrical properties, extending to classifying different triangles (for example, isosceles, equilateral, scalene) and quadrilaterals (for example, parallelogram, rhombus, trapezium). Pupils compare and order angles in preparation for using a protractor and compare lengths and angles to decide if a polygon is regular or irregular. Pupils draw symmetric patterns using a variety of media to become familiar with different orientations of lines of symmetry; and recognise line	Pupils understand and use a greater range of scales in their representations. Pupils begin to relate the graphical representation of data to recording change.

	Roman numerals should be put in their historical context so pupils understand that there have been different ways to write whole numbers and that the important concepts of zero and place value were introduced over a period of time.		9 × 7 and associative law (2 × 3) × 4 = 2 × (3 × 4)). They combine their knowledge of number facts and rules of arithmetic to solve mental and written calculations for example, 2 x 6 x 5 = 10 x 6 = 60. Pupils solve two-step problems in contexts, choosing the appropriate operation, working with increasingly harder numbers. This should include correspondence questions such as the numbers of choices of a meal on a menu, or three cakes shared equally between 10 children.	Pupils use factors and multiples to recognise equivalent fractions and simplify where appropriate (for example, 6 / 9 = 2 / 3 or 1 / 4 = 2 / 8). Pupils continue to practice adding and subtracting fractions with the same denominator, to become fluent through a variety of increasingly complex problems beyond one whole. Pupils are taught throughout that decimals and fractions are different ways of expressing numbers and proportions. Pupils' understanding of the number system and				symmetry in a variety of diagrams, including where the line of symmetry does not dissect the original shape. Pupils continue to classify shapes using geometrical properties, extending to classifying different triangles (for example, isosceles, equilateral, scalene) and quadrilaterals (for example, parallelogram, rhombus, trapezium). Pupils compare and order angles in preparation for using a protractor and compare lengths and angles to decide if a polygon is regular or irregular. Pupils draw symmetric	

				decimal place value is extended at this stage to tenths and then hundredths. This includes relating the decimal notation to division of whole number by 10 and later 100. They practise counting using simple fractions and decimal fractions, both forwards and backwards. Pupils learn decimal notation and the language associated with it, including in the context of measurements. They make comparisons and order decimal amounts and quantities that are expressed to the same				patterns using a variety of media to become familiar with different orientations of lines of symmetry; and recognise line symmetry in a variety of diagrams, including where the line of symmetry does not dissect the original shape. Pupils draw a pair of axes in one quadrant, with equal scales and integer labels. They read, write and use pairs of coordinates, for example (2, 5), including using coordinate plotting ICT tools.	

				number of decimal places. They should be able to represent numbers with one or two decimal places in several ways, such as on number lines.					
Y5 Statutory	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	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	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 (non-prime) numbers establish whether a number up to 100 is prime and recall prime numbers up to 19 multiply numbers up to 4	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	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 measure and calculate the perimeter of composite			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 360 o) - angles at a point on a straight line and ½ a turn (total 180 o) - other multiples of 90	solve comparison, sum and difference problems using information presented in a line graph complete, read and interpret information in tables, including timetables

	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	solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	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 multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 recognise and use square numbers and cube numbers,	number [for example, 2 / 5 + 4 / 5 = 6 / 5 = 1 1 / 5] add and subtract fractions with the same denominator and multiples of the same number multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams read and write decimal numbers as fractions [for example, 0.71 = 71 / 100] recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents round decimals with two	rectilinear shapes in centimetres and metres calculate and compare the area of rectangles (including squares) using standard units, square centimetres (cm 2) and square metres (m 2) and estimate the area of irregular shapes estimate volume [for example, using 1 cm 3 blocks to build cuboids(including cubes)] and capacity[for example, using water] solve problems involving converting between units of time use all four operations to solve problems involving measure [for example, length, mass,			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 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	

			and the notation for squared (2) and cubed (3) solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates	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 1 / 2 , 1 / 4 , 1 / 5 ,	volume, money] using decimal notation including scaling				

				2 / 5 , 4 / 5 and those with a denominator of a multiple of 10 or 25					
Y5 Non-Statutory	Pupils identify the place value in large whole numbers. They continue to use number in context, including measurement. Pupils extend and apply their understanding of the number system to the decimal numbers and fractions that they have met so far. They should recognise and describe linear number sequences (for example, 3, 3 ½ , 4, 4 1/2 ...), including those involving fractions and decimals, and	Pupils practise using the formal written methods of columnar addition and subtraction with increasingly large numbers to aid fluency They practise mental calculations with increasingly large numbers to aid fluency (for example, 12 462 – 2 300 = 10 162).	Pupils practise and extend their use of the formal written methods of short multiplication and short division They apply all the multiplication tables and related division facts frequently, commit them to memory and use them confidently to make larger calculations. They use and understand the terms factor, multiple and prime, square and cube numbers. Pupils interpret non-integer answers to division by expressing	Pupils should be taught throughout that percentages, decimals and fractions are different ways of expressing proportions. They extend their knowledge of fractions to thousandths and connect to decimals and measures. Pupils connect equivalent fractions > 1 that simplify to integers with division and other fractions > 1 to division with remainders, using the number line and other models, and hence move from these to	Pupils use their knowledge of place value and multiplication and division to convert between standard units. Pupils calculate the perimeter of rectangles and related composite shapes, including using the relations of perimeter or area to find unknown lengths. Missing measures questions such as these can be expressed algebraically, for example 4 + 2b = 20 for a rectangle of sides 2 cm and b cm and perimeter of 20cm.			Pupils become accurate in drawing lines with a ruler to the nearest millimetre, and measuring with a protractor. They use conventional markings for parallel lines and right angles. Pupils use the term diagonal and make conjectures about the angles formed between sides, and between diagonals and parallel sides , and other properties of quadrilaterals, for example using dynamic geometry ICT tools.	Pupils connect their work on coordinates and scales to their interpretation of time graphs. They begin to decide which representations of data are most appropriate and why.

	find the term-to-term rule in words (for example, add ½)		results in different ways according to the context, including with remainders, as fractions, as decimals or by rounding (for example, 98 ÷ 4 = 98/4 = 24 r 2 = 24 1 / 2 = 24.5 ≈ 25). Pupils use multiplication and division as inverses to support the introduction of ratio in year 6, for example, by multiplying and dividing by powers of 10 in scale drawings or by multiplying and dividing by powers of a 1000 in converting between units such as kilometres and metres. Distributivity can be expressed as a(b + c) = ab + ac.	improper and mixed fractions. Pupils connect multiplication by a fraction to using fractions as operators (fractions of), and to division, building on work from previous years. This relates to scaling by simple fractions, including fractions > 1. Pupils practise adding and subtracting fractions to become fluent through a variety of increasingly complex problems. They extend their understanding of adding and subtracting fractions to calculations that exceed 1 as a mixed number.	Pupils calculate the area from scale drawings using given measurements. Pupils use all four operations in problems involving time and money, including conversions (for example, days to weeks, expressing the answer as weeks and days).			Pupils use angle sum facts and other properties to make deductions about missing angles and relate these to missing number problems. Pupils recognise and use reflection and translation in a variety of diagrams, including continuing to use a 2- D grid and coordinate s in the first quadrant. Reflection should be in lines that are parallel to the axes.	

			They understand the terms factor, multiple and prime, square and cube numbers and use them to construct equivalence statements (for example, 4 x 35 = 2 x 2 x 35; 3 x 270 = 3 x 3 x 9 x 10 = 9 2 x 10). Pupils use and explain the equals sign to indicate equivalence, including in missing number problems (for example, 13 + 24 = 12 + 25; 33 = 5 x □).	Pupils continue to practise counting forwards and backwards in simple fractions. Pupils continue to develop their understanding of fractions as numbers, measures and operators by finding fractions of numbers and quantities. Pupils extend counting from year 4, using decimals and fractions including bridging zero, for example on a number line. Pupils say, read and write decimal fractions and related tenths, hundredths and thousandths accurately and are confident in checking the reasonableness					

				of their answers to problems. They mentally add and subtract tenths, and onedigit whole numbers and tenths. They practise adding and subtracting decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and complements of 1 (for example, 0.83 + 0.17 = 1). Pupils should go beyond the measurement and money models of decimals, for example, by solving puzzles involving decimals.					

				Pupils should make connections between percentages, fractions and decimals (for example, 100% represents a whole quantity and 1% is 1/100, 50% is 50/100, 25% is					
Y6 Statutory	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	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.		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	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 such as 15% of 360] and the use of percentages for comparison	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	solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places	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	interpret and construct pie charts and line graphs and use these to solve problems calculate and interpret the mean as an average

	problems that involve all of the above	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	equivalent fractions multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, 1 / 4 × 1 / 2 = 1 / 8] divide proper fractions by whole numbers [for example, 1 / 3 ÷ 2 = 1 / 6] associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, 3 / 8] identify the value of each digit to three decimal places and multiply and divide	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	of two variables	convert between miles and kilometres 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	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 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	

			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 solve problems which require answers to be rounded to specified degrees of accuracy recall and use equivalences between simple fractions, decimals and percentages,					

			including in different contexts					
Y6 Non-Statutory	Pupils use the whole number system, including saying, reading and writing numbers accurately	Pupils practise addition, subtraction, multiplication and division for larger numbers, using the formal written methods of columnar addition and subtraction, short and long multiplication, and short and long division They undertake mental calculations with increasingly large numbers and more complex calculations. Pupils continue to use all the multiplication tables to calculate mathematical statements in order to maintain their fluency. Pupils round answers to a specified degree of accuracy, for example, to the nearest 10, 20, 50 etc, but not to a specified number of significant figures. Pupils explore the order of operations using brackets; for example, 2 + 1 x 3 = 5 and (2 + 1) x 3 = 9.	Pupils should practise, use and understand the addition and subtraction of fractions with different denominators by identifying equivalent fractions with the same denominator. They should start with fractions where the denominator of one fraction is a multiple of the other (for example, ½ + 1/8 = 5/8) and progress to varied and increasingly complex problems.	Pupils recognise proportionality in contexts when the relations between quantities are in the same ratio (for example, similar shapes, recipes). Pupils link percentages or 360° to calculating angles of pie charts. Pupils should consolidate their understanding of ratio when comparing quantities, sizes and scale drawings by solving a variety of problems.	Pupils should be introduced to the use of symbols and letters to represent variables and unknowns in mathematical situations that they already understand, such as: missing numbers, lengths, coordinates and angles formulae in mathematics and science equivalent expressions (for example, a + b = b + a) generalisation	Pupils connect conversion (for example, from kilometres to miles) to a graphical representation as preparation for understanding linear/proportional graphs. They know approximate conversions and are able to tell if an answer is sensible. Using the number line, pupils use, add and subtract positive and negative integers for measures such as temperature. They relate the area of rectangles to parallelograms and triangles, for	Pupils draw shapes and nets accurately, using measuring tools and conventional markings and labels for lines and angles. Pupils describe the properties of shapes and explain how unknown angles and lengths can be derived from known measurements. These relationships might be expressed algebraically for example, d = 2 × r; a = 180 - (b + c). Pupils draw and label a pair of	Pupils connect their work on angles, fractions and percentages to the interpretation of pie charts. Pupils both encounter and draw graphs relating two variables, arising from their own enquiry and in other subjects. They should connect conversion from kilometres to miles in measurement to its graphical representation

		Common factors can be related to finding equivalent fractions.	Pupils should use a variety of images to support their understanding of multiplication with fractions. This follows earlier work about fractions as operators (fractions of), as numbers, and as equal parts of objects, for example as parts of a rectangle. Pupils use their understanding of the relationship between unit fractions and division to work backwards by multiplying a quantity that represents a unit fraction to find the whole quantity (for	They might use the notation a:b to record their work. Pupils solve problems involving unequal quantities for example, 'for every egg you need three spoonfuls of flour', ' 3 / 5 of the class are boys'. These problems are the foundation for later formal approaches to ratio and proportion.	of number patterns number puzzles (for example, what two numbers can add up to).	example, by dissection, and calculate their areas, understanding and using the formulae (in words or symbols) to do this. Pupils could be introduced to compound units for speed, such as miles per hour, and apply their knowledge in science or other subjects as appropriate.	axes in all four quadrants with equal scaling. This extends their knowledge of one quadrant to all four quadrants, including the use of negative numbers. Pupils draw and label rectangles (including squares), parallelograms and rhombuses, specified by coordinates in the four quadrants, predicting missing coordinates using the properties of shapes. These might be expressed algebraically for example, translating vertex (a, b) to (a-2, b+3); (a, b) and (a+d, b+d)	Pupils know when it is appropriate to find the mean of a data set

			example, if ¼ of a length is 36cm, then the whole length is 36 × 4 = 144cm). They practise calculations with simple fractions and decimal fraction equivalents to aid fluency, including listing equivalent fractions to identify fractions with common denominators. Pupils can explore and make conjectures about converting a simple fraction to a decimal fraction (for example, 3 ÷ 8 = 0.375). For simple fractions with recurring				being opposite vertices of a square of side d.	

			decimal equivalents, pupils learn about rounding the decimal to three decimal places, or other appropriate approximations depending on the context. Pupils multiply and divide numbers with up to two decimal places by one-digit and two-digit whole numbers. Pupils multiply decimals by whole numbers, starting with the simplest cases, such as $0.4 \times 2 = 0.8$, and in practical contexts, such as measures and money. Pupils are					

			introduced to the division of decimal numbers by one-digit whole number, initially, in practical contexts involving measures and money. They recognise division calculations as the inverse of multiplication. Pupils also develop their skills of rounding and estimating as a means of predicting and checking the order of magnitude of their answers to decimal calculations. This includes rounding answers to a specified degree of					

			accuracy and checking the reasonableness of their answers.					