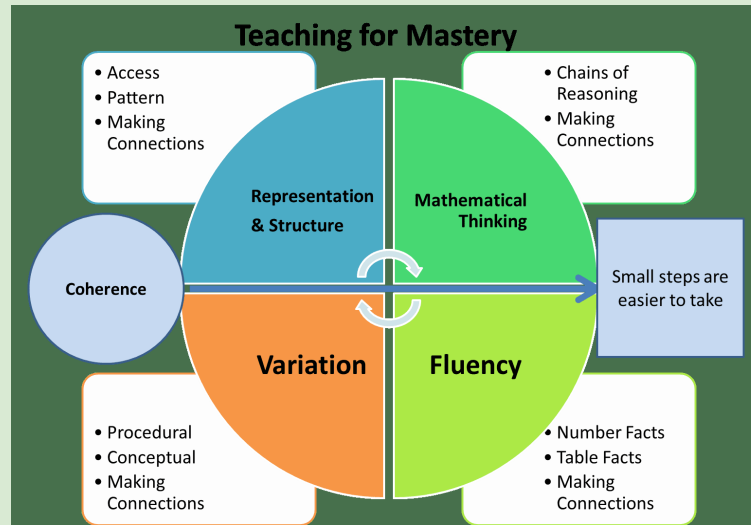


Mathematics

Intent










The national curriculum for mathematics aims to ensure that all pupils:

- Become fluent in the fundamentals of mathematics.
- Reason mathematically by following a line of enquiry.
- Can solve problems by applying their mathematics to a variety of problems.

At Brotherton and Byram, we want our children to develop as confident, independent and resilient learners who are not afraid to tackle more demanding problems. Our intent is that every pupil accesses a broad and balanced mathematical experience through the statutory framework for the Early Years Foundation Stage and the National Curriculum. We teach an engaging and carefully sequenced maths curriculum which builds on prior learning. By adopting a small-step, mastery approach, all children, regardless of their starting point, will maximise their academic achievement and leave Brotherton and Byram Primary Academy prepared for the future, as being numerate is an essential life skill.

Year 1 Maths Curriculum

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Unit	1	2 3	4 5	6 7	8 9	10 11

	Number and place value		Fractions
	Number facts		Geometry
	Addition and Subtraction		Other
	Multiplication and division		

Unit	Year 1	NC Objectives	Language
1	<p>Previous Reception experiences and counting within 100</p> <ul style="list-style-type: none"> 1NPV-1 Count within 100, forwards and backwards, starting with any number. 1.9 Composition of numbers: 20-100 	<p>Number and Place Value</p> <ul style="list-style-type: none"> Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number Read and write numbers to 100 in numerals; <p>Non Statutory Notes NAS - Pupils combine and increase numbers, counting forwards and backwards.</p>	
2	<p>Comparison of quantities and part-whole relationships</p> <ul style="list-style-type: none"> 1NPV-1 Count within 100, forwards and backwards, starting with any number. 1NPV-2 Reason about the location of numbers to 20 within the linear number system, including comparing using $<$ $>$ and $=$. 1.1 Comparison of quantities and measures 1.2 Introducing 'whole' and 'parts': part-part-whole 		
3	<p>Numbers 0 to 5</p> <ul style="list-style-type: none"> 1NPV-2 Reason about the location of numbers to 20 within the linear number system, including comparing using $<$ $>$ and $=$. 1AS-1 Compose numbers to 10 from 2 parts, and partition numbers to 10 into parts, including recognising odd and even numbers. 1.3 Composition of numbers: 0-5 	<p>Number and Place Value</p> <ul style="list-style-type: none"> count, read and write numbers to 20 in numerals; count, 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 and write numbers from 1 to 20 in numerals and words <p>Non Statutory Notes NPV - Pupils practise counting (1, 2, 3...), ordering (for example, first, second, third...), and to indicate a quantity (for example, 3 apples, 2 centimetres), including solving simple concrete problems, until they are fluent. NAS - 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.</p>	
4	<p>Recognise, compose, decompose and manipulate 2D and 3D shapes</p> <ul style="list-style-type: none"> 1G-1 Recognise common 2D and 3D shapes presented in different orientations, and know that rectangles, triangles, cuboids and pyramids are not always similar to one another. 1G-2 Compose 2D and 3D shapes from smaller shapes to match an example, including manipulating shapes to place them in particular orientations. 	<p>Geometry</p> <ul style="list-style-type: none"> 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 and spheres]. <p>Non Statutory Notes NPV - They recognise and create repeating patterns with objects and with shapes. G - 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.</p>	

5	<p>Numbers 0 to 10</p> <ul style="list-style-type: none"> 1NPV–2 Reason about the location of numbers to 20 within the linear number system, including comparing using $<$ $>$ and $=$. 1AS–1 Compose numbers to 10 from 2 parts, and partition numbers to 10 into parts, including recognising odd and even numbers. 1.4 Composition of numbers: 6–10 	<p>Number and Place Value</p> <ul style="list-style-type: none"> Count, read and write numbers to 20 in numerals; count, 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 and write numbers from 1 to 20 in numerals and words <p>Non Statutory Notes NPV - Pupils practise counting (1, 2, 3...), ordering (for example, first, second, third...), and to indicate a quantity (for example, 3 apples, 2 centimetres), including solving simple concrete problems, until they are fluent. NAS - 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.</p>	
6	<p>Additive structures</p> <ul style="list-style-type: none"> 1AS–2 Read, write and interpret equations containing addition (+), subtraction (-) and equals (=) symbols, and relate additive expressions and equations to real-life contexts. 1.5 Additive structures: introduction to aggregation and partitioning 1.6 Additive structures: introduction to augmentation and reduction 	<p>Number – addition and subtraction</p> <ul style="list-style-type: none"> read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = - 9$. Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. (NC Y2) <p>Non Statutory Notes NAS - They discuss and solve problems in familiar practical contexts, including using quantities. Problems should include the terms: put together, add, altogether, total, 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.</p>	
7	<p>Addition and subtraction facts within 10</p> <ul style="list-style-type: none"> 1NF–1 Develop fluency in addition and subtraction facts within 10. 1.7 Addition and subtraction: strategies within 10 	<p>Number – addition and subtraction</p> <ul style="list-style-type: none"> read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = - 9$. <p>Non Statutory Notes NAS - They discuss and solve problems in familiar practical contexts, including using quantities. Problems should include the terms: put together, add, altogether, total, 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.</p>	
8	<p>Numbers 0 to 20</p> <ul style="list-style-type: none"> 1NPV–2 Reason about the location of numbers to 20 within the linear number system, including comparing using $<$ $>$ and $=$. 1.10 Composition of numbers: 11–19 	<p>Number and Place Value</p> <ul style="list-style-type: none"> count, read and write numbers to 20 in numerals; count, 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 and write numbers from 1 to 20 in numerals and words <p>Measurement</p> <ul style="list-style-type: none"> compare, describe and solve practical problems for: lengths and heights [for example, long/short, longer/shorter, tall/short, double/half] measure and begin to record the following: lengths and heights <p>Non Statutory Notes NPV - Pupils practise counting (1, 2, 3...), ordering (for example, first, second, third...), and to indicate a quantity (for example, 3 apples, 2 centimetres), including solving simple concrete problems, until they are fluent. NAS - 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 M - 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.</p>	

9	<p>Unitising and coin recognition</p> <ul style="list-style-type: none"> • 1NF–2 Count forwards and backwards in multiples of 2, 5 and 10, up to 10 multiples, beginning with any multiple, and count forwards and backwards through the odd numbers. • 2.1 Counting, unitising and coins 	<p>Number and Place Value</p> <ul style="list-style-type: none"> • count in multiples of twos, fives and tens • recognise and know the value of different denominations of coins and notes <p>Non Statutory Notes</p> <p>NPV - They practise counting as reciting numbers and counting as enumerating objects, and counting in twos, fives and tens from different multiples to develop their recognition of patterns in the number system (for example, odd and even numbers), including varied and frequent practice through increasingly complex questions.</p> <p>NMD - They make connections between arrays, number patterns, and counting in twos, fives and tens.</p>	
10	<p>Position and direction</p> <ul style="list-style-type: none"> • This topic is part of the National Curriculum but is not included in the DfE 2020 guidance or the NCETM Mastery PD Materials. 	<p>Geometry – Position and Direction</p> <ul style="list-style-type: none"> • describe position, direction and movement, including whole, half, quarter and three quarter turns <p>Non Statutory Notes</p> <p>GPD - 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.</p> <p>GPD - Pupils make whole, half, quarter and three-quarter turns in both directions and connect turning clockwise with movement on a clock face.</p>	
11	<p>Time</p> <ul style="list-style-type: none"> • This topic is part of the National Curriculum but is not included in the DfE 2020 guidance or the NCETM Mastery PD Materials. 	<p>Measurement</p> <ul style="list-style-type: none"> • compare, describe and solve practical problems for: time [for example, quicker, slower, earlier, later] • measure and begin to record the following: time (hours, minutes, seconds) • 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. <p>Non Statutory Notes</p> <p>M - 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.</p> <p>M - Pupils use the language of time, including telling the time throughout the day, first using o'clock and then half past</p>	
12	<p>Introduction to Fractions</p> <ul style="list-style-type: none"> • 3.0 Guidance on the teaching of fractions in Key Stage 1 	<p>Number - Fractions</p> <ul style="list-style-type: none"> • 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. <p>Non Statutory Notes</p> <p>NF - 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.</p>	
13	<p>Introduction to Sense of measure – capacity, volume, mass</p> <ul style="list-style-type: none"> • This topic is part of the National Curriculum but is not included in the DfE 2020 guidance or the NCETM Mastery Professional Development Materials. 	<p>Measure</p> <ul style="list-style-type: none"> • compare, describe and solve practical problems for: • mass/weight [for example, heavy/light, heavier than, lighter than] • capacity and volume [for example, full/empty, more than, less than, half, half full, quarter] <p>Non Statutory Notes</p> <p>M - The pairs of terms: mass and weight, volume and capacity, are used interchangeably at this stage.</p> <p>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.</p> <p>In order to become familiar with standard measures, pupils begin to use measuring tools such as a ruler, weighing scales and containers.</p>	

	1	2	3	4	5	6	7	8	9	10	11	12	13
C1	Unit 1 Previous Reception experiences and counting within 100				Unit 2 Comparison of quantities and part-whole relationships			Unit 3 Numbers 0 to 5		Unit 4 Recognise, compose, decompose and manipulate 2D and 3D shapes			Unit 5 Numbers 0 to 10
MN	Mastering Number weeks 1-5						Mastering Number weeks 6-10						
C2	Unit 5 Numbers 0 to 10		Unit 6 Additive structures				Unit 7 Addition and subtraction facts within 10			Unit 8 Numbers 0 to 20			
MN	Mastering Number weeks 11 - 15						Mastering Number weeks 16 - 20						
C3	Unit 9 Unitising and coin recognition					Unit 10 Position and direction	Unit 11 Time		*Unit 12* Fractions		*Unit 13* Measure		
MN	Mastering Number weeks 21 - 25						Mastering Number weeks 26 -31						

Year 2 Maths Curriculum



Unit	Year 2	NC Objectives	Language
1	<p>Numbers 10 to 100</p> <ul style="list-style-type: none"> 2NPV-1 Recognise the place value of each digit in two-digit numbers, and compose and decompose two-digit numbers using standard and non-standard partitioning. 2NPV-2 Reason about the location of any two-digit number in the linear number system, including identifying the previous and next multiple of 10. 1.8 Composition of numbers: multiples of 10 up to 100 1.9 Composition of numbers: 20-100 	<p>Number and Place Value</p> <ul style="list-style-type: none"> recognise the place value of each digit in a two-digit number (tens, ones) identify, represent and estimate numbers using different representations, including the number line compare and order numbers from 0 up to 100; use <, > and = signs read and write numbers to at least 100 in numerals and in words use place value and number facts to solve problems. read and write numbers to 100 in numerals; (NC Y1 NCETM Y2) recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 (Also in Y3) <p>Non Statutory Notes NPV - 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. NPV - As they become more confident with numbers up to 100, pupils are introduced 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. NPV - 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. (NC Y1 NCETM Y2)</p>	
2	<p>Calculations within 20</p> <ul style="list-style-type: none"> 2AS-1 Add and subtract across 10. 2AS-2 Recognise the subtraction structure of 'difference' and answer questions of the form, "How many more...?". 1.11 Addition and subtraction: bridging 10 1.12 Subtraction as difference 	<p>Number – Addition and Subtraction</p> <ul style="list-style-type: none"> represent and use number bonds and related subtraction facts within 20 (NC Y1 NCETM Y2) add and subtract one-digit and two-digit numbers to 20, including zero (NC Y1 NCETM Y2) <p>Solve problems with addition and subtraction:</p> <ul style="list-style-type: none"> using concrete objects and pictorial representations, including those involving numbers, quantities and measures applying their increasing knowledge of mental and written methods Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: <ul style="list-style-type: none"> adding three one-digit numbers show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. (NC Y2 NCETM Y1) (Teach 2022/23 only) <p>Non Statutory Notes NAS - Pupils extend their understanding of the language of addition and subtraction to include sum and difference. NAS - 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, including by adding to</p>	

		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.	
3	Fluently add and subtract within 10 <ul style="list-style-type: none"> 2NF–1 Secure fluency in addition and subtraction facts within 10, through continued practice. 1.7 Addition and subtraction: strategies within 10 	Number – Addition and Subtraction <ul style="list-style-type: none"> read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs (Cont from Y1) solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$. (Cont from Y1) recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 (NC Y2 NCETM Y3) 	
4	Addition and subtraction of two-digit numbers (1) <ul style="list-style-type: none"> 2AS–3 Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract only ones or only tens to/from a two-digit number. 1.13 Addition and subtraction: two-digit and single-digit numbers 1.14 Addition and subtraction: two-digit numbers and multiples of ten 	Number – Addition and Subtraction <ul style="list-style-type: none"> Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: <ul style="list-style-type: none"> a two-digit number and ones a two-digit number and tens add and subtract one-digit and two-digit numbers to 20, including zero (NC Y1 NCETM Y2) <p>Non Statutory Notes NAS - 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, 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.</p>	
5	Introduction to multiplication <ul style="list-style-type: none"> 2MD–1 Recognise repeated addition contexts, representing them with multiplication equations and calculating the product, within the 2, 5 and 10 multiplication tables. 2.2 Structures: multiplication representing equal groups 2.3 Times tables: groups of 2 and commutativity (part 1) 2.4 Times tables: groups of 10 and of 5, and factors of 0 and 1 2.5 Commutativity (part 2), doubling and halving 	Number and Place Value <ul style="list-style-type: none"> count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward Number – Multiplication and Division <ul style="list-style-type: none"> 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. (NC Y1 NCETM Y2) recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (\times), division (\div) and equals (=) signs show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts <p>Non Statutory Notes NMD - 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. (NC Y1 NCETM Y2) NMD - Pupils use a variety of language to describe multiplication and division. NMD - 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 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. NMD - 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, $40 \div 2 = 20$, 20 is a half of 40). They use commutativity and inverse relations to develop multiplicative reasoning (for example, $4 \times 5 = 20$ and $20 \div 5 = 4$).</p>	

6

Introduction to division structures

- 2MD–2 Relate grouping problems where the number of groups is unknown to multiplication equations with a missing factor, and to division equations (quotitive division).
- 2.6 Structures: quotitive and partitive division

Number – Multiplication and Division

- 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. (NC Y1 NCETM Y2)
- recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
- calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (\times), division (\div) and equals (=) signs
- show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot
- solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts

Non Statutory Notes

NMD - 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. (NC Y1 NCETM Y2)

NMD - Pupils use a variety of language to describe multiplication and division.

NMD - 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 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.

NMD - 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, $40 \div 2 = 20$, 20 is a half of 40). They use commutativity and inverse relations to develop multiplicative reasoning (for example, $4 \times 5 = 20$ and $20 \div 5 = 4$).

7

Shape

- 2G–1 Use precise language to describe the properties of 2D and 3D shapes, and compare shapes by reasoning about similarities and differences in properties.

Geometry – Properties of Shape

- identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line
- identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces
- identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]
- compare and sort common 2-D and 3-D shapes and everyday objects

Non Statutory Notes

Pupils handle and name a wide 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, 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.

8

Addition and subtraction of two-digit numbers (2)

- 2AS–4 Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract any 2 two-digit numbers.
- 1.15 Addition: two-digit and two-digit numbers
- 1.16 Subtraction: two-digit and two-digit numbers

Number – Addition and Subtraction

- Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:
 - two two-digit numbers

Non Statutory Notes

NAS - 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, 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.

NAS - Recording addition and subtraction in columns supports place value and prepares for formal written methods with larger numbers.

9	<p>Money</p> <ul style="list-style-type: none"> • This topic is part of the National Curriculum but is not included in the DfE 2020 guidance or the NCETM Mastery Professional Development Materials. 	<p>Measurement</p> <ul style="list-style-type: none"> • 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 <p>Non Statutory Notes 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</p>	
10	<p>Fractions</p> <ul style="list-style-type: none"> • 3.0 Guidance on the teaching of fractions in Key Stage 1 	<p>Number – Fractions</p> <ul style="list-style-type: none"> • recognise, find and name a half as one of two equal parts of an object, shape or quantity (NC Y1 NCETM Y3) • recognise, find and name a quarter as one of four equal parts of an object, shape or quantity. (NC Y1 NCETM Y3) • recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{3}$, $\frac{2}{3}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity (NC Y1 NCETM Y3) • write simple fractions for example, $\frac{1}{2}$ of $6 = 3$ and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$. (NC Y1 NCETM Y3) <p>Non Statutory Notes</p> <p>NF - Pupils are taught ‘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 (NC Y1 NCETM Y3)</p> <p>NF - They connect unit fractions to equal sharing and grouping, to numbers when they can be calculated, and to measures, finding fractions of lengths, quantities, sets of objects or shapes. They meet $\frac{3}{4}$ as the first example of a non-unit fraction. Pupils should count in fractions up to 10, starting from any number and using the $\frac{1}{2}$ and $\frac{2}{4}$ equivalence on the number line (for example, $1\frac{1}{4}$, $2\frac{2}{4}$ (or $1\frac{1}{2}$), $1\frac{3}{4}$, 2). This reinforces the concept of fractions as numbers and that they can add up to more than one. (NC Y2 NCETM Y3)</p>	
11	<p>Time</p> <ul style="list-style-type: none"> • This topic is part of the National Curriculum but is not included in the DfE 2020 guidance or the NCETM Mastery Professional Development Materials. 	<p>Measurement</p> <ul style="list-style-type: none"> • compare and sequence intervals of time • tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times • know the number of minutes in an hour and the number of hours in a day. <p>Non Statutory Notes They become fluent in telling the time on analogue clocks and recording it.</p>	
12	<p>Position and direction</p> <ul style="list-style-type: none"> • This topic is part of the National Curriculum but is not included in the DfE 2020 guidance or the NCETM Mastery Professional Development Materials. 	<p>Geometry - Position and Direction</p> <ul style="list-style-type: none"> • 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) <p>Non Statutory Notes 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).</p>	
13	<p>Multiplication and division – doubling, halving, quotitive and partitive division</p> <ul style="list-style-type: none"> • 2.5 Commutativity (part 2), doubling and halving 	<p>Number – Multiplication and Division</p> <ul style="list-style-type: none"> • 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. (NC Y1 NCETM Y2) 	

- 2.6 Structures: quotitive and partitive division

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

Non Statutory Notes

NMD - 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. (NC Y1 NCETM Y2)

NMD - Pupils use a variety of language to describe multiplication and division.

NMD - 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 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.

NMD - 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, $40 \div 2 = 20$, 20 is a half of 40). They use commutativity and inverse relations to develop multiplicative reasoning (for example, $4 \times 5 = 20$ and $20 \div 5 = 4$).

Sense of measure – capacity, volume, mass

- This topic is part of the National Curriculum but is not included in the DfE 2020 guidance or the NCETM Mastery Professional Development Materials.

Measure

- compare, describe and solve practical problems for:
 - mass/weight [for example, heavy/light, heavier than, lighter than]
 - capacity and volume [for example, full/empty, more than, less than, half, half full, quarter]
- measure and begin to record the following:
 - mass/weight
 - capacity and volume
- choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature ($^{\circ}\text{C}$); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels
- compare and order lengths, mass, volume/capacity and record the results using $>$, $<$ and $=$

(NC Y1 NCETM Y2)

Non Statutory Notes

The pairs of terms: mass and weight, volume and capacity, are used interchangeably at this stage. (NC Y1 NCETM Y2)

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. (NC Y1 NCETM Y2)

In order to become familiar with standard measures, pupils begin to use measuring tools such as a ruler, weighing scales and containers. (NC Y1 NCETM Y2)

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.

Statistics

- This topic is part of the National Curriculum but is not included in the DfE 2020 guidance or the NCETM Mastery PD Materials.

Statistics

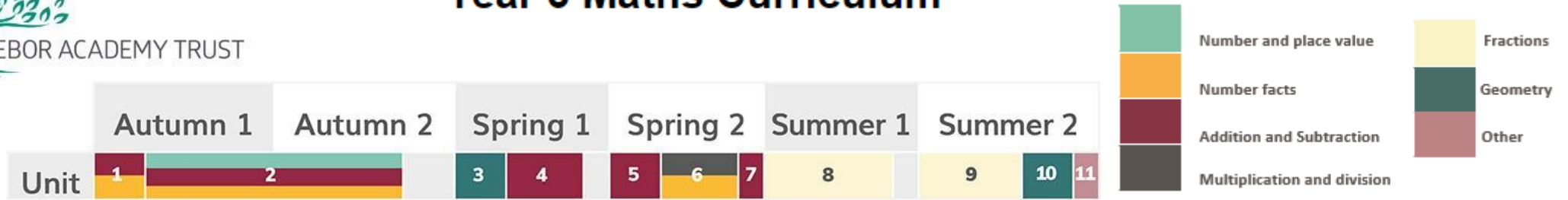
- interpret and construct simple pictograms, tally charts, block diagrams and simple tables
- ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity
- ask and answer questions about totalling and comparing categorical data

Non Statutory Notes

Pupils record, interpret, collate, organise and compare information (for example, using many-to-one correspondence in pictograms with simple ratios 2, 5, 10).

Y2	1	2	3	4	5	6	7	8	9	10	11	12	13
C1	Unit 1 Numbers 10 to 100				Unit 2 Calculations within 20			Unit 3 Fluently add and subtract within 10	Unit 4 Addition and subtraction of two-digit numbers (1)		Unit 5 Introduction to multiplication		
		Mastering Number Weeks 1 - 5						Mastering Number Weeks 6 - 10					
C2	Unit 5 Introduction to multiplication	Unit 6 Introduction to division structures		Unit 7 Shape		Unit 8 Addition and subtraction of two-digit numbers (2)			Unit 9 Money	Unit 10 Fractions		Unit 11 Time	Unit 12 Position and direction
	Mastering Number Weeks 11 - 15						Mastering Number Weeks 16 - 20						MN Weeks 21 - 26
C3	Unit 13 Multiplication and division – doubling, halving, quotative and partitive division			Unit 14 Sense of measure – capacity, volume, mass		SATS		*Unit 15* Cross Curricular Statistics			*Unit 16* Deeper Application and Consolidation Year 3 Ready		
	Mastering Number Weeks 21 - 26						Mastering Number Weeks 27 - 31						

Year 3 Maths Curriculum



Year 3	NC Objectives	Language
<p>1</p> <p>Adding and subtracting across 10</p> <ul style="list-style-type: none"> 2AS-1 Add and subtract across 10. 3NF-1 Secure fluency in addition and subtraction facts that bridge 10, through continued practice. 1.11 Addition and subtraction: bridging 10 	<p>Number – Addition and Subtraction Solve problems with addition and subtraction:</p> <ul style="list-style-type: none"> using concrete objects and pictorial representations, including those involving numbers, quantities and measures applying their increasing knowledge of mental and written methods adding three one-digit numbers show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot recall and use addition and subtraction facts to 20 fluently, <u>and derive and use related facts up to 100 (NC Y2 NCETM Y3)</u> <p>Non Statutory Notes NAS - Pupils extend their understanding of the language of addition and subtraction to include sum and difference. NAS - 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, 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.</p>	
<p>2</p> <p>Numbers to 1,000</p> <ul style="list-style-type: none"> 3NPV-1 Know that 10 tens are equivalent to 1 hundred, and that 100 is 10 times the size of 10; apply this to identify and work out how many 10s there are in other three-digit multiples of 10. 3NPV-2 Recognise the place value of each digit in three-digit numbers, and compose and decompose three-digit numbers using standard and non-standard partitioning. 3NPV-3 Reason about the location of any three-digit number in the linear number system, including identifying the previous and next multiple of 100 and 10. 3NPV-4 Divide 100 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in multiples of 100 with 2, 4, 5 and 10 equal parts. 3AS-1 Calculate complements to 100. 3NF-3 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 10). 1.17 Composition and calculation: 100 and bridging 100 1.18 Composition and calculation: three-digit numbers 	<p>Number – Number and Place Value</p> <ul style="list-style-type: none"> count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number recognise the place value of each digit in a three-digit number (hundreds, tens, ones) compare and order numbers up to 1000 identify, represent and estimate numbers using different representations read and write numbers up to 1000 in numerals and in words solve number problems and practical problems involving these ideas <p>Number Addition and Subtraction</p> <ul style="list-style-type: none"> recall and use addition and subtraction facts to 20 fluently, <u>and derive and use related facts up to 100 (NC Y2 NCETM Y3)</u> <p>Measurement</p> <ul style="list-style-type: none"> measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) <p>Non Statutory Notes NPV - Pupils now use multiples of 2, 3, 4, 5, 8, 10, 50 and 100. NPV - They use larger numbers to at least 1000, applying partitioning related to place value using varied and increasingly complex problems, building on work in year 2 (for example, $146 = 100 + 40$ and $6, 146 = 130 + 16$).</p>	

		<p>NPV - 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.</p> <p>M - 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 equivalents of mixed units (for example, 5m = 500cm).</p>	
3	<p>Right angles</p> <ul style="list-style-type: none"> 3G–1 Recognise right angles as a property of shape or a description of a turn, and identify right angles in 2D shapes presented in different orientations. 	<p>Geometry – Properties of Shape</p> <ul style="list-style-type: none"> recognise angles as a property of shape or a description of a turn identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle 	
4	<p>Manipulating the additive relationship and securing mental calculation</p> <ul style="list-style-type: none"> 3AS–3 Manipulate the additive relationship: Understand the inverse relationship between addition and subtraction, and how both relate to the part–part–whole structure. Understand and use the commutative property of addition, and understand the related property for subtraction. 1.19 Securing mental strategies: calculation up to 999 	<p>Number - Addition and Subtraction</p> <ul style="list-style-type: none"> add and subtract numbers mentally, including a three-digit number and ones a three-digit number and tens a three-digit number and hundreds estimate the answer to a calculation and use inverse operations to check answers solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction <p>Non Statutory Notes</p> <p>NAS - Pupils practise solving varied addition and subtraction questions. For mental calculations with two-digit numbers, the answers could exceed 100.</p> <p>NAS - Pupils practise solving varied addition and subtraction questions. For mental calculations with two-digit numbers, the answers could exceed 100.</p>	
5	<p>Column addition</p> <ul style="list-style-type: none"> 3AS–2 Add and subtract up to three-digit numbers using columnar methods. 1.20 Algorithms: column addition 	<p>Number - Addition and Subtraction</p> <ul style="list-style-type: none"> add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction estimate the answer to a calculation and use inverse operations to check answers solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction <p>Non Statutory Notes</p> <p>AS - Pupils use their understanding of place value and partitioning, and practise using columnar addition and subtraction with increasingly large numbers up to three digits to become fluent (see Mathematics Appendix 1).</p>	
6	<p>2, 4, 8 times tables</p> <ul style="list-style-type: none"> 3MD–1 Apply known multiplication and division facts to solve contextual problems with different structures, including quotitive and partitive division. 3NF–2 Recall multiplication facts, and corresponding division facts, in the 10, 5, 2, 4 and 8 multiplication tables, and recognise products in these multiplication tables as multiples of the corresponding number. 3NF–3 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 10). 2.7 Times tables: 2, 4 and 8, and the relationship between them 	<p>Number – Multiplication and Division</p> <ul style="list-style-type: none"> recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables (3x table NC Y3 NCETM Y4) write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, <p>Non Statutory Notes</p> <p>NMD - Pupils now use multiples of 2, 3, 4, 5, 8, 10, 50 and 100. (3x table NC Y3 NCETM Y4)</p> <p>NMD - 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 and 8 multiplication tables.</p>	
7	<p>Column subtraction</p> <ul style="list-style-type: none"> 3AS–2 Add and subtract up to three-digit numbers using columnar methods. 1.21 Algorithms: column subtraction 	<p>Number - Addition and Subtraction</p> <ul style="list-style-type: none"> add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction estimate the answer to a calculation and use inverse operations to check answers solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction 	

	<p>Non Statutory Notes</p> <p>AS - Pupils use their understanding of place value and partitioning, and practise using columnar addition and subtraction with increasingly large numbers up to three digits to become fluent (see Mathematics Appendix 1).</p>	
<p>Unit fractions</p> <ul style="list-style-type: none"> • 3F–1 Interpret and write proper fractions to represent 1 or several parts of a whole that is divided into equal parts. • 3F–2 Find unit fractions of quantities using known division facts (multiplication tables fluency). • 3.1 Preparing for fractions: the part–whole relationship • 3.2 Unit fractions: identifying, representing and comparing <p>8</p>	<p>Number - Fractions</p> <ul style="list-style-type: none"> • recognise, find and write fractions of a discrete set of objects: unit fractions and non unit fractions with small denominators • recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators • compare and order unit fractions, and fractions with the same denominators • add and subtract fractions with the same denominator within one whole [for example, $5/7 + 1/7 = 6/7$] • solve problems that involve all of the above. <p>Non Statutory Notes</p> <p>NF - Pupils make connections between fractions of a length, of a shape and as a representation of one whole or set of quantities. (NC Y4 NCETM Y3)</p> <p>NF - They begin to understand unit and non-unit fractions as numbers on the number line, and deduce relations between them, such as size and equivalence. They should go beyond the [0, 1] interval, including relating this to measure.</p> <p>NF - Pupils understand the relation between unit fractions as operators (fractions of), and division by integers.</p> <p>NF - 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.</p>	
<p>Non-unit fractions</p> <ul style="list-style-type: none"> • 3F–1 Interpret and write proper fractions to represent 1 or several parts of a whole that is divided into equal parts. • 3F–3 Reason about the location of any fraction within 1 in the linear number system. • 3F–4 Add and subtract fractions with the same denominator, within 1. • 3.3 Non-unit fractions: identifying, representing and comparing • 3.4 Adding and subtracting within one whole <p>9</p>	<p>Number - Fractions</p> <ul style="list-style-type: none"> • recognise, find and write fractions of a discrete set of objects: unit fractions and non unit fractions with small denominators • recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators • compare and order unit fractions, and fractions with the same denominators • add and subtract fractions with the same denominator within one whole [for example, $5/7 + 1/7 = 6/7$] • solve problems that involve all of the above. <p>Non Statutory Notes</p> <p>NF - Pupils make connections between fractions of a length, of a shape and as a representation of one whole or set of quantities. (NC Y4 NCTM Y3)</p> <p>NF - They begin to understand unit and non-unit fractions as numbers on the number line, and deduce relations between them, such as size and equivalence. They should go beyond the [0, 1] interval, including relating this to measure.</p> <p>NF - 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.</p> <p>NF - Pupils practise adding and subtracting fractions with the same denominator through a variety of increasingly complex problems to improve fluency.</p>	
<p>Parallel and perpendicular sides in polygons</p> <ul style="list-style-type: none"> • 3G–2 Draw polygons by joining marked points, and identify parallel and perpendicular sides. <p>10</p>	<p>Geometry – Properties of Shape</p> <ul style="list-style-type: none"> • draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them • identify horizontal and vertical lines and pairs of perpendicular and parallel lines <p>Non Statutory Notes</p> <p>GPS - Pupils’ knowledge of the properties of shapes is extended at this stage to symmetrical and non-symmetrical polygons and polyhedra. Pupils extend their use of the properties of shapes. They 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.</p>	
<p>Time</p> <ul style="list-style-type: none"> • This topic is part of the National Curriculum but is not included in the DfE 2020 guidance or the NCETM Mastery PD Materials. <p>11</p>	<p>Measurement</p> <ul style="list-style-type: none"> • tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks • estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o’clock, a.m./p.m., morning, afternoon, noon and midnight • know the number of seconds in a minute and the number of days in each month, year and leap year 	

- compare durations of events [for example to calculate the time taken by particular events or tasks].

Non Statutory Notes

M - 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.

Y3	1	2	3	4	5	6	7	8	9 – NTS?	10	11	12	13
C1	Unit 1		Unit 2										
	Adding and subtracting across 10		Numbers to 1,000										
TT	Consolidate Addition/Subtraction Facts within 10 Adding 1, Adding 2, Adding 0, Bonds to 10.			Within 10 Double 1-5	Within 10 Add in Double 10	Across 10 Add in double 6	Across 10 Add in double 7	Across 10 Add in double 8	Across 10 Add in double 9	Near Doubles (+/-1)	Near doubles (+/- 2)	Ones without a family (5+8, 8+5, 3+6, 6+3)	All Addition/Subtraction facts of numbers within 10
C2	Unit 3 Right angles		Unit 4 Manipulating the additive relationship and securing mental calculation 2 times table Intro Lesson 1 2 times table Intro Lesson 2 Commutativity 2 times table Intro Lesson 3: Division			Unit 5 Column addition		Unit 6 2, 4, 8 times tables 5 times table Standard Intro Lesson			Unit 7 Column subtraction		
	All Addition/Subtraction facts of numbers within 10	Doubles 1-10		2 times table (multiplier first)	2 times table (multiplier first or second)	2 times table (division facts added in)	2 times table	2 times table	5 times table (2x5 to 6x 5)	5 times table (2x5 to 6x 5)	5 times table (7x5 to 9x5)	5 times table (all)	5 times table (all)
C3	Unit 8 Unit fractions 4 times table Standard Intro Lesson					Unit 9 Non-unit fractions			Unit 10 Parallel and perpendicular sides in polygons		Unit 11 Time		
	5 times table and 2 tt	5 times table and 2 tt	5 times table and 2 tt	5 times table and 2 tt	4 times table (2 x4 to 6x4)	4 times table (7 x4 to 9x4)	4 times table all facts	2, 4, 5tt facts	2, 4, 5tt facts	2, 4, 5tt facts	2, 4, 5tt facts	2, 4, 5tt facts	10 tt brush up!

Year 4 Maths Curriculum



Unit	Year 4	NC Objectives	Language
1	<p>Review of column addition and subtraction</p> <ul style="list-style-type: none"> 3AS–2 Add and subtract up to three-digit numbers using columnar methods. 1.20 Algorithms: column addition 1.21 Algorithms: column subtraction 	<p>Number – Addition and Subtraction</p> <ul style="list-style-type: none"> add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate estimate and use inverse operations to check answers to a calculation solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why. <p>Non Statutory Notes NAS - Pupils continue to practise both mental methods and columnar addition and subtraction with increasingly large numbers to aid fluency (see Mathematics Appendix 1)</p>	
2	<p>Numbers to 10,000</p> <ul style="list-style-type: none"> 4NPV–1 Know that 10 hundreds are equivalent to 1 thousand, and that 1,000 is 10 times the size of 100; apply this to identify and work out how many 100s there are in other four-digit multiples of 100. 4NPV–2 Recognise the place value of each digit in four-digit numbers, and compose and decompose four-digit numbers using standard and non-standard partitioning. 4NPV–3 Reason about the location of any four-digit number in the linear number system, including identifying the previous and next multiple of 1,000 and 100, and rounding to the nearest of each. 4NPV–4 Divide 1,000 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in multiples of 1,000 with 2, 4, 5 and 10 equal parts. 4NF–3 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 100). 1.22 Composition and calculation: 1,000 and four-digit numbers 	<p>Number – Number and Place Value</p> <ul style="list-style-type: none"> count in multiples of 6, 7, 9, 25 and 1000 find 1000 more or less than a given number recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) 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 <p>Number – Addition and Subtraction</p> <ul style="list-style-type: none"> add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate estimate and use inverse operations to check answers to a calculation solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why. <p>Non Statutory Notes NPV - 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. NPV - They connect estimation and rounding numbers to the use of measuring instruments NAS - Pupils continue to practise both mental methods and columnar addition and subtraction with increasingly large numbers to aid fluency (see Mathematics Appendix 1)</p>	

3	<p>Perimeter and Right Angles</p> <ul style="list-style-type: none"> 4G–2 Identify regular polygons, including equilateral triangles and squares, as those in which the side-lengths are equal and the angles are equal. Find the perimeter of regular and irregular polygons. 2.16 Multiplicative contexts: area and perimeter 1 	<p>Measure</p> <ul style="list-style-type: none"> measure the perimeter of simple 2-D shapes (NC Y3 NCETM Y4) measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres convert between different units of measure [for example, kilometre to metre; hour to minute] measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres (NC Y5 NCETM Y4) distinguish between regular and irregular polygons based on reasoning about equal sides and angles (NC Y5 NCETM Y4) <p>Geometry – Properties of Shapes</p> <ul style="list-style-type: none"> compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes <p>Non Statutory Notes</p> <p>GPS - Perimeter can be expressed algebraically as $2(a + b)$ where a and b are the dimensions in the same unit.</p> <p>GPS - 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).</p> <p>GPS - Pupils compare and order angles in preparation for using a protractor</p> <p>M - 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. (NC Y5 NCTEM Y4)</p>	
4	<p>3, 6, 9 times tables</p> <ul style="list-style-type: none"> 4NF–1 Recall multiplication and division facts up to 12×12, and recognise products in multiplication tables as multiples of the corresponding number. 2.8 Times tables: 3, 6 and 9, and the relationship between them 	<p>Number – Number and Place Value</p> <ul style="list-style-type: none"> count in multiples of 6, 7, 9, 25 and 1000 <p>Number – Multiplication and Division</p> <ul style="list-style-type: none"> recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables (NC Y3 NCETM Y4) recall multiplication and division facts for multiplication tables up to 12×12 <p>Non Statutory Notes</p> <p>NMD - Pupils continue to practise recalling and using multiplication tables and related division facts to aid fluency</p>	
5	<p>7 times table and patterns</p> <ul style="list-style-type: none"> 4NF–1 Recall multiplication and division facts up to 12×12, and recognise products in multiplication tables as multiples of the corresponding number. 2.9 Times tables: 7 and patterns within/across times tables 	<p>Number – Multiplication and Division</p> <ul style="list-style-type: none"> recall multiplication and division facts for multiplication tables up to 12×12 <p>Non Statutory Notes</p> <p>NMD - Pupils continue to practise recalling and using multiplication tables and related division facts to aid fluency</p>	
6	<p>Understanding and manipulating multiplicative relationships</p> <ul style="list-style-type: none"> 4MD–1 Multiply and divide whole numbers by 10 and 100 (keeping to whole number quotients); understand this as equivalent to making a number 10 or 100 times the size. 4MD–2 Manipulate multiplication and division equations, and understand and apply the commutative property of multiplication. 4MD–3 Understand and apply the distributive property of multiplication. 4NF–3 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 100) 2.10 Connecting multiplication and division, and the distributive law 2.13 Calculation: multiplying and dividing by 10 or 100 	<p>Number – Multiplication and Division</p> <ul style="list-style-type: none"> recall multiplication and division facts for multiplication tables up to 12×12 solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit <p>Non Statutory Notes</p> <p>NMD - Pupils write statements about the equality of expressions (for example, use the distributive law $39 \times 7 = 30 \times 7 + 9 \times 7$ and associative law $(2 \times 3) \times 4 = 2 \times (3 \times 4)$). They combine their knowledge of number facts and rules of arithmetic to solve mental and written calculations for example, $2 \times 6 \times 5 = 10 \times 6 = 60$.</p>	
7	<p>Coordinates</p> <ul style="list-style-type: none"> 4G–1 Draw polygons, specified by coordinates in the first quadrant, and translate within the first quadrant. 	<p>Geometry – Position and Direction</p> <ul style="list-style-type: none"> 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 	

		<p>Non Statutory Notes 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</p>	
8	<p>Review of fractions</p> <ul style="list-style-type: none"> 3F–1 Interpret and write proper fractions to represent 1 or several parts of a whole that is divided into equal parts. 3.1 Preparing for fractions: the part–whole relationship 		
9	<p>Fractions greater than 1</p> <ul style="list-style-type: none"> 4F–1 Reason about the location of mixed numbers in the linear number system. 4F–2 Convert mixed numbers to improper fractions and vice versa. 4F–3 Add and subtract improper and mixed fractions with the same denominator, including bridging whole numbers. 3.5 Working across one whole: improper fractions and mixed numbers 	<p>Number – Fractions</p> <ul style="list-style-type: none"> add and subtract fractions with the same denominator They extend the use of the number line to connect fractions, numbers and measures. recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, $\frac{7}{5} + \frac{4}{5} = \frac{11}{5} = 1 \frac{6}{5}$] (NC Y5 NCETM Y4) <p>Non Statutory Notes NF - Pupils make connections between fractions of a length, of a shape and as a representation of one whole or set of quantities. (NC Y4 NCETM Y3) (Teach 2022/23 only) NF - 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. (NC Y5 NCETM Y4) NF - They practise counting using simple fractions and decimals, both forwards and backwards.(Daily Counting)</p>	
10	<p>Symmetry in 2D shapes</p> <ul style="list-style-type: none"> 4G–3 Identify line symmetry in 2D shapes presented in different orientations. Reflect shapes in a line of symmetry and complete a symmetric figure or pattern with respect to a specified line of symmetry. 	<p>Geometry – Properties of Shapes</p> <ul style="list-style-type: none"> compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes 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. <p>Non Statutory Notes GPS - Pupils draw symmetric 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.</p>	
11	<p>Time</p> <ul style="list-style-type: none"> This topic is part of the National Curriculum but is not included in the DfE 2020 guidance or the NCETM Mastery PD Materials. 	<p>Measure</p> <ul style="list-style-type: none"> convert between different units of measure [for example, kilometre to metre; hour to minute] 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 	
12	<p>Division with remainders</p> <ul style="list-style-type: none"> 4NF–2 Solve division problems, with two-digit dividends and one-digit divisors, that involve remainders. 2.12 Division with remainders 	<p>Number – Multiplication and Division</p> <ul style="list-style-type: none"> recall multiplication and division facts for multiplication tables up to 12×12 	
13*	<p>Transformations</p> <ul style="list-style-type: none"> This topic is part of the National Curriculum but is not included in the DfE 2020 guidance or the NCETM Mastery PD Materials. 	<p>Transformations</p> <ul style="list-style-type: none"> 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 <p>Non Statutory Notes Pupils recognise and use reflection and translation in a variety of diagrams, including continuing to use a 2-D grid and coordinates in the first quadrant. Reflection should be in lines that are parallel to the axes.</p>	

	1	2	3	4	5	6	7	8	9	10	11	12	13
C1	Unit 1			Unit 2				Unit 3		Unit 4			
	Review of column addition and subtraction			Numbers to 10,000				Perimeter and Right Angles		3, 6, 9 times tables			
				8 times table Standard Intro Lesson				3 times table Standard Intro Lesson					
TT	Recap Year 3			8 times table			All 8 times table			3 times table			3 times table plus all previous facts
	All Addition/Subtraction facts within 102,5,4 tts			5 new facts (8x3, 8x6, 8x7, 8x8, 8x9)			Plus all previously learnt facts			4 new facts (3x3, 6x3, 7x3, 9x3)			
C2	Unit 4	Unit 5		Unit 6				Unit 7		Unit 8	Unit 9		
	3, 6, 9 times tables	7 times table and patterns		Understanding and manipulating multiplicative relationships				Coordinates		Review of fractions	Fractions greater than 1		
		6 times table Standard Intro Lesson						9 times table Standard Intro Lesson			7 times table Standard Intro Lesson		
TT	All 3 times table		6 times table			All 6 times table			9 times table	All 9 times table		7 times tables	7 times tables
	Plus all previously learnt facts		3 new facts (6x6, 7x6, 9x6)			Plus all previously learnt facts			2 new facts (9x7, 9x9)	Plus all previously learnt facts		1 new fact (7x7)	All facts now learnt
C3	Unit 9			Unit 10		Unit 11	Unit 12		MTC	*Unit 13*			
	Fractions greater than 1			Symmetry in 2D shapes		Time	Division with remainders			Transformations			
	11 and 12 times table Standard Intro Lesson												
TT	All times tables up to 9x9			All to 9x9 practice for some			All in MTC for some			MTC	All to 9x9 practice for some and All in MTC for some		

Year 5 Maths Curriculum



Unit	Year 5	NC Objectives	Language
1	<p>Decimal fractions</p> <ul style="list-style-type: none"> 5NPV-1 Know that 10 tenths are equivalent to 1 one, and that 1 is 10 times the size of 0.1. Know that 100 hundredths are equivalent to 1 one, and that 1 is 100 times the size of 0.01. Know that 10 hundredths are equivalent to 1 tenth, and that 0.1 is 10 times the size of 0.01. 5NPV-2 Recognise the place value of each digit in numbers with up to 2 decimal places, and compose and decompose numbers with up to 2 decimal places using standard and non-standard partitioning. 5NPV-3 Reason about the location of any number with up to 2 decimal places in the linear number system, including identifying the previous and next multiple of 1 and 0.1 and rounding to the nearest of each. 5NPV-4 Divide 1 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in units of 1 with 2, 4, 5 and 10 equal parts. 5NF-2 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 1 tenth or 1 hundredth). 1.23 Composition and calculation: tenths 1.24 Composition and calculation: hundredths and thousandths 	<p>Number – Number and Place Value</p> <ul style="list-style-type: none"> Pupils continue to practise counting forwards and backwards in simple fractions. Pupils extend counting from year 4, using decimals and fractions including bridging zero, for example on a number line. <p>Number – Multiplication and Division</p> <ul style="list-style-type: none"> 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 (NC Y3 NCETM Y5) 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 (NC Y4 NCETM Y5) recognise and use factor pairs and commutativity in mental calculations (NC Y4 NCETM Y5) multiply two-digit and three-digit numbers by a one-digit number using formal written layout (NC Y4 NCETM Y5) <p>Number - Fractions</p> <ul style="list-style-type: none"> 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 (NC Y3 NCETM Y5) count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. (NC Y4 NCETM Y5) round decimals with one decimal place to the nearest whole number (NC Y4 NCETM Y5) recognise and write decimal equivalents of any number of tenths or hundredths (NC Y4 NCETM Y5) compare numbers with the same number of decimal places up to two decimal places (NC Y4 NCETM Y5) solve simple measure and money problems involving fractions and decimals to two decimal places (NC Y4 NCETM Y5) 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 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 <p>Measurement</p> <ul style="list-style-type: none"> use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling. <p>Non Statutory Notes</p> <p>NPV - They begin to extend their knowledge of the number system to include the decimal numbers and fractions that they have met so far. (NC Y4 NCETM Y5)</p> <p>NMD - Pupils develop efficient mental methods, for example, using commutativity and associativity (for example, $4 \times 12 \times 5 = 4 \times 5 \times 12 = 20 \times 12 = 240$) and multiplication and division facts (for example, using $3 \times 2 = 6$, $6 \div 3 = 2$ and $2 = 6 \div 3$) to derive related facts (for example, $30 \times 2 = 60$, $60 \div 3 = 20$ and $20 = 60 \div 3$). (NC Y3 NCETM Y5)</p> <p>NMD - 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 multiplication and division. (NC Y3 NCETM Y5)</p>	

	<p>NMD - Pupils practise mental methods and extend this to three-digit numbers to derive facts, (for example $600 \div 3 = 200$ can be derived from $2 \times 3 = 6$) (NC Y4 NCETM Y5)</p> <p>Pupils practise to become fluent in the formal written method of short multiplication and short division with exact answers (see Mathematics Appendix 1). (NC Y4 NCETM Y5)</p> <p>NF - Pupils connect tenths to place value, decimal measures and to division by 10.(NC Y3 NCETM Y5)</p> <p>NF - Pupils should connect hundredths to tenths and place value and decimal measure.(NC Y4 NCETM Y5)</p> <p>NF - Pupils understand the relation between non-unit fractions and multiplication and division of quantities, with particular emphasis on tenths and hundredths. (NC Y4 NCETM Y5)</p> <p>NF - Pupils are taught throughout that decimals and fractions are different ways of expressing numbers and proportions. (NC Y4 NCETM Y5)</p> <p>NF - Pupils' understanding of the number system and 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. (NC Y4 NCETM Y5)</p> <p>NF - 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 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. (NC Y4 NCETM Y5)</p> <p>GPS - Pupils connect decimals and rounding to drawing and measuring straight lines in centimetres, in a variety of contexts (NC Y3 NCETM Y5)</p> <p>NPV - 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.</p> <p>NPV - They should recognise and describe linear number sequences, including those involving fractions and decimals, and find the term-to-term rule.</p> <p>NPV - They should recognise and describe linear number sequences (for example, 3, 3 $\frac{1}{2}$, 4, 4 $\frac{1}{2}$...), including those involving fractions and decimals, and find the term-to-term rule in words (for example, add $\frac{1}{2}$).</p> <p>NF - They extend their knowledge of fractions to thousandths and connect to decimals and measures</p> <p>NF - 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.</p> <p>NF - They mentally add and subtract tenths, and one-digit whole numbers and tenths.</p> <p>NF - 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, $0.83 + 0.17 = 1$).</p>	
<p>2</p> <p>Money</p> <ul style="list-style-type: none"> • 1.25 Addition and subtraction: money 	<p>Measure</p> <ul style="list-style-type: none"> • Add and subtract amounts of money to give change, using both £ and p in practical contexts (NC Y3 NCETM Y5) • estimate, compare and calculate different measures, including money in pounds and pence (NC Y4 NCETM Y5) • Pupils build on their understanding of place value and decimal notation to record metric measures, including money. (NC Y4 NCETM Y5) <p>Non Statutory Notes</p> <p>NMD - Pupils practise mental methods and extend this to three-digit numbers to derive facts, (for example $600 \div 3 = 200$ can be derived from $2 \times 3 = 6$) (NC Y4 NCETM Y5)</p> <p>MND - Pupils practise to become fluent in the formal written method of short multiplication and short division with exact answers (see Mathematics Appendix 1). (NC Y4 NCETM Y5)</p> <p>M - 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. (NC Y3 NCETM Y5)</p> <p>NF - Pupils should go beyond the measurement and money models of decimals, for example, by solving puzzles involving decimals.</p>	
<p>3</p> <p>Negative numbers</p> <ul style="list-style-type: none"> • 1.27 Negative numbers: counting, comparing and calculating 	<p>Number – Number and Place Value</p> <ul style="list-style-type: none"> • use negative numbers in context, and calculate intervals across zero (NC Y6 NCETM Y5) • Count backwards through zero to include negative numbers (NC Y4 NCETM Y5) 	

- 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 (NC Y3 NCETM Y5)
- 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. (NC Y4 NCETM Y4,5,6)
- interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero and solve number problems and practical problems that involve all of the above

Measurement

- Using the number line, pupils use, add and subtract positive and negative integers for measures such as temperature. (NC Y6 NCETM Y5)

Non Statutory Notes

NMD - 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).

Short multiplication and short division

- 5MD–3 Multiply any whole number with up to 4 digits by any one-digit number using a formal written method.
- 5MD–4 Divide a number with up to 4 digits by a one-digit number using a formal written method, and interpret remainders appropriately for the context.
- 2.14 Multiplication: partitioning leading to short multiplication
- 2.15 Division: partitioning leading to short division

Number – Multiplication and Division

- Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. (NC Y3 NCETM Y4,5,6)
- 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 (NC Y4 NCETM Y4,5,6)
- recognise and use factor pairs and commutativity in mental calculations (NC Y4 NCETM Y4,5,6)
- multiply two-digit and three-digit numbers by a one-digit number using formal written layout (NC Y4 NCETM Y4,5,6)
- multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers
- multiply and divide numbers mentally drawing upon known facts
- divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context

Non Statutory Notes

NMD - Pupils develop efficient mental methods, for example, using commutativity and associativity (for example, $4 \times 12 \times 5 = 4 \times 5 \times 12 = 20 \times 12 = 240$) and multiplication and division facts (for example, using $3 \times 2 = 6$, $6 \div 3 = 2$ and $2 = 6 \div 3$) to derive related facts (for example, $30 \times 2 = 60$, $60 \div 3 = 20$ and $20 = 60 \div 3$). (NC Y3 NCETM Y4,5,6)

Pupils practise mental methods and extend this to three-digit numbers to derive facts, (for example $600 \div 3 = 200$ can be derived from $2 \times 3 = 6$) (NC Y4 NCETM Y5)

Pupils practise to become fluent in the formal written method of short multiplication and short division with exact answers (see [Mathematics Appendix 1](#)). (NC Y4 NCETM Y5)

NMD - 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 multiplication and division. (NC Y3 NCETM Y4,5,6)

NMD - Pupils practise and extend their use of the formal written methods of short multiplication and short division (see [Mathematics Appendix 1](#)). They apply all the multiplication tables and related division facts frequently, commit them to memory and use them confidently to make larger calculations.

NMD - Pupils interpret non-integer answers to division by expressing results in different ways according to the context, including with remainders, as fractions, as decimals or by rounding (for example, $98 \div 4 = 98/4 = 24 \text{ r } 2 = 24 / 21 = 24.5 \approx 25$).

NMD - Distributivity can be expressed as $a(b + c) = ab + ac$.

Area and scaling

- 5G–2 Compare areas and calculate the area of rectangles (including squares) using standard units.
- 2.16 Multiplicative contexts: area and perimeter 1
- 2.17 Structures: using measures and comparison to understand scaling

Measurement

- distinguish between regular and irregular polygons based on reasoning about equal sides and angles (NC Y5 NCETM Y4) (Teach 2022/23 only)
- find the area of rectilinear shapes by counting squares (NC Y4 NCETM Y5)
- They relate area to arrays and multiplication. (NC Y4 NCETM Y5)
- calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes
- recognise that shapes with the same areas can have different perimeters and vice versa (NC Y6 NCETM Y5)
- recognise when it is possible to use formulae for area and volume of shapes (NC Y6 NCETM Y5)
- calculate the area of parallelograms and triangles (NC Y6 NCETM Y5)

Number – Multiplication and Division

- 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 (NC Y3 NCETM Y5)
- 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. NC Y4, NCETM Y4,5,6)
- solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates
- solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes

Transformations

- 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 (NC Y5 NCETM Y4 Teach 2022/23 only)

Non Statutory Notes

M - The comparison of measures includes 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. (NC Y3 NCETM Y5)

M - 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. (NC Y5 NCETM Y4) (Teach 2022/23 only)

NMD - 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). (NC Y3 NCETM Y5)

NMD - 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.

NF - 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 .

M - Pupils calculate the area from scale drawings using given measurements.

T - Pupils recognise and use reflection and translation in a variety of diagrams, including continuing to use a 2-D grid and coordinates in the first quadrant. Reflection should be in lines that are parallel to the axes. (NC Y5 NCETM Y4)

Calculating with decimal fractions

- 5MD–1 Multiply and divide numbers by 10 and 100; understand this as equivalent to making a number 10 or 100 times the size, or 1 tenth or 1 hundredth times the size.
- 2.19 Calculation: \times/\div decimal fractions by whole numbers
- 2.29 Decimal place-value knowledge, multiplication and division

Number – Number and Place Value

- Pupils continue to practise counting forwards and backwards in simple fractions.
- Pupils extend counting from year 4, using decimals and fractions including bridging zero, for example on a number line.

Number – Fractions

- 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 (NC Y4 NCETM Y5)

- identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places (NC Y6 NCETM Y5)
- multiply one-digit numbers with up to two decimal places by whole numbers (NC Y6 NCETM Y5)

Number – Multiplication and Division

- multiply and divide whole numbers and those involving decimals by 10, 100 and 1000

Measurement

- They use multiplication to convert from larger to smaller units. (NC Y4 NCETM Y5)
- convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)
- solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate (NC Y6 NCETM Y5)
- 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 (NC Y6 NCETM Y5)

Non Statutory Notes

M - Pupils use their knowledge of place value and multiplication and division to convert between standard units.

NF - Pupils can explore and make conjectures about converting a simple fraction to a decimal fraction (for example, $3 \div 8 = 0.375$). For simple fractions with recurring 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. (NC Y6 NCETM Y5)

NF - 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. (NC Y6 NCETM Y5)

NF - 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. (NC Y6 NCETM Y5)

Factors, multiples and primes

- 5MD–2 Find factors and multiples of positive whole numbers, including common factors and common multiples, and express a given number as a product of 2 or 3 factors.
- 2.20 Multiplication with three factors and volume
- 2.21 Factors, multiples, prime numbers and composite numbers

Number – Multiplication and Division

- identify common factors, common multiples and prime numbers (NC Y6 NCETM Y5)
- recognise when it is possible to use formulae for area and volume of shapes (NC Y6 NCETM Y5)
- 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
- recognise and use square numbers and cube numbers, and the notation for squared (2^2) and cubed (3^3)

Measurement

- estimate volume [for example, using 1 cm³ blocks to build cuboids (including cubes)] and capacity [for example, using water]
- calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other units [for example, mm³ and km³]. (NC Y6 NCTEM Y5)

Non Statutory Notes

NMD - They use and understand the terms factor, multiple and prime, square and cube numbers.

NMD - They understand the terms factor, multiple and prime, square and cube numbers and use them to construct equivalence statements (for example, $4 \times 35 = 2 \times 2 \times 35$; $3 \times 270 = 3 \times 3 \times 9 \times 10 = 9^2 \times 10$).

<p>Fractions</p> <ul style="list-style-type: none"> • 5NPV-5 Convert between units of measure, including using common decimals and fractions. • 5F-1 Find non-unit fractions of quantities. • 5F-2 Find equivalent fractions and understand that they have the same value and the same position in the linear number system. • 5F-3 Recall decimal fraction equivalents for $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$ and $\frac{1}{10}$, and for multiples of these proper fractions. • 3.6 Multiplying whole numbers and fractions • 3.7 Finding equivalent fractions and simplifying fractions • 3.10 Linking fractions, decimals and percentages 	<p>Number – Number and Place Value</p> <ul style="list-style-type: none"> • Pupils continue to practise counting forwards and backwards in simple fractions. • Pupils extend counting from year 4, using decimals and fractions including bridging zero, for example on a number line. <p>Number Fractions</p> <ul style="list-style-type: none"> • 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. (NC Y5 NCETM Y4) Teach 2022/23 only) • recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, $\frac{7}{5} + \frac{4}{5} = \frac{6}{5} = 1 \frac{1}{5}$] (NC Y5 NCETM Y4) Teach 2022/23 only) • recognise and show, using diagrams, equivalent fractions with small denominators (NC Y3 NCETM Y5) • recognise and show, using diagrams, families of common equivalent fractions (NC Y4 NCETM Y5) • 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 (NC Y4 NCETM Y5) • recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ (NC Y4 NCETM Y5) • 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 • multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams <p>Non Statutory Notes</p> <p>NF - Pupils use factors and multiples to recognise equivalent fractions and simplify where appropriate (for example, $\frac{6}{9} = \frac{2}{3}$ or $\frac{1}{4} = \frac{2}{8}$). (NC Y4 NCETM Y5)</p> <p>NF - Pupils continue to develop their understanding of fractions as numbers, measures and operators by finding fractions of numbers and quantities.</p> <p>NF - 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 example, if $\frac{1}{4}$ of a length is 36cm, then the whole length is $36 \times 4 = 144$cm). (NC Y6 NCETM Y5)</p>	
<p>Converting units</p> <ul style="list-style-type: none"> • 5NPV-5 Convert between units of measure, including using common decimals and fractions. 	<p>Measurement</p> <ul style="list-style-type: none"> • understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints • solve problems involving converting between units of time • convert between miles and kilometres (NC Y6 NCETM Y5) <p>Geometry - Properties of shape</p> <ul style="list-style-type: none"> • measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres (NC Y5 NCETM Y4) (Teach 2022/23 only) <p>Non Statutory Notes</p> <p>M - 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).</p> <p>M - Pupils connect conversion (for example, from kilometres to miles) to a graphical representation as preparation for understanding linear/proportional graphs (NC Y6 NCETM Y5)</p> <p>M - They know approximate conversions and are able to tell if an answer is sensible. (NC Y6 NCETM Y5)</p>	
<p>Angles</p>	<p>Geometry – Properties of shape</p> <ul style="list-style-type: none"> • identify acute and obtuse angles and compare and order angles up to two right angles by size (NC Y4 NCETM Y5) 	

10 • 5G–1 Compare angles, estimate and measure angles in degrees (°) and draw angles of a given size.

- identify 3-D shapes, including cubes and other cuboids, from 2-D representations
- know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
- draw given angles, and measure them in degrees (o)

Identify:

- angles at a point and one whole turn (total 360o)
- angles at a point on a straight line and 1/2 a turn (total 180o)
- other multiples of 90o
- use the properties of rectangles to deduce related facts and find missing lengths and angles

Non Statutory Notes

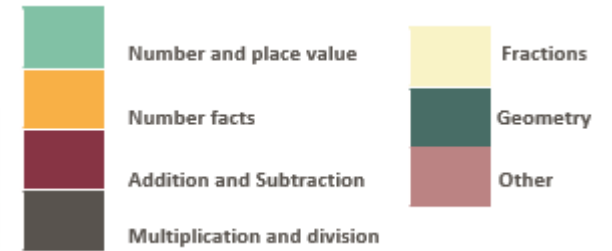
GPS - Pupils become accurate in drawing lines with a ruler to the nearest millimetre, and measuring with a protractor. They use conventional markings for parallel lines and right angles.

GPS - 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.

GPS - Pupils use angle sum facts and other properties to make deductions about missing angles and relate these to missing number problems.

	1	2	3	4	5	6	7	8	9	10	11	12	13	
c1	Unit 1				Unit 2			Unit 3		Unit 4				
	Decimal fractions					Money			Negative numbers		Short multiplication and short division			
	Bespoke TT/Additive Facts inputs													
c2	Unit 4		Unit 5					Unit 6			Unit 7			
	Short multiplication and short division		Area and scaling					Calculating with decimal fractions			Factors, multiples and primes			
c3	Unit 7	Unit 8						Unit 9		Unit 10				
	Factors, multiples and primes	Fractions						Converting units		Angles				

Year 6 Maths Curriculum



Unit	Year 6	NC Objectives	Language
	Where?	Measures <ul style="list-style-type: none"> • solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate (NC Y6 NCETM Y5) • 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 (NC Y6 NCETM Y5) • convert between miles and kilometres (NC Y6 NCETM Y5) • Using the number line, pupils use, add and subtract positive and negative integers for measures such as temperature. (NC Y6 NCETM Y5) • Non-Stat Guidance • 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 	
1	Calculating using knowledge of structures (1) <ul style="list-style-type: none"> • 6AS/MD–1 Understand that 2 numbers can be related additively or multiplicatively, and quantify additive and multiplicative relationships (multiplicative relationships restricted to multiplication by a whole number). • 6AS/MD–2 Use a given additive or multiplicative calculation to derive or complete a related calculation, using arithmetic properties, inverse relationships, and place-value understanding. • 1.28 Common structures and the part–part–whole relationship • 1.29 Using equivalence and the compensation property to calculate 		
2	Multiples of 1,000 <ul style="list-style-type: none"> • 1.26 Composition and calculation: multiples of 1,000 up to 1,000,000 	Number – Addition and Subtraction <ul style="list-style-type: none"> • add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) (NCY5 NCETM Y6) • add and subtract numbers mentally with increasingly large numbers (NCY5 NCETM Y6) • use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy (NCY5 NCETM Y6) • solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why (NCY5 NCETM Y6) Non Statutory Notes NAS - Pupils practise using the formal written methods of columnar addition and subtraction with increasingly large numbers to aid fluency (see Mathematics Appendix 1). (NCY5 NCETM Y6)	

NAS - They practise mental calculations with increasingly large numbers to aid fluency (for example, $12\,462 - 2300 = 10\,162$). (NCY5 NCETM Y6)

Numbers up to 10,000,000

- 6NPV–1 Understand the relationship between powers of 10 from 1 hundredth to 10 million, and use this to make a given number 10, 100, 1,000, 1 tenth, 1 hundredth or 1 thousandth times the size (multiply and divide by 10, 100 and 1,000).
- 6NPV–2 Recognise the place value of each digit in numbers up to 10 million, including decimal fractions, and compose and decompose numbers up to 10 million using standard and non-standard partitioning.
- 6NPV–3 Reason about the location of any number up to 10 million, including decimal fractions, in the linear number system, and round numbers, as appropriate, including in contexts.
- 6NPV–4 Divide powers of 10, from 1 hundredth to 10 million, into 2, 4, 5 and 10 equal parts, and read scales/number lines with labelled intervals divided into 2, 4, 5 and 10 equal parts.
- 1.30 Composition and calculation: numbers up to 10,000,000

Number: Number and Place Value

- use negative numbers in context, and calculate intervals across zero NC Y6 NCETM Y5) (Taught in 2022/23 only)
- identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places (NC Y6 NCETM Y5) (Taught in 2022/23 only)
- multiply one-digit numbers with up to two decimal places by whole numbers (NC Y6 NCETM Y5) (Taught in 2022/23 only)
- read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (NC Y5 Y6 NCETM Y6)
- count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 (NCY5 NCETM Y6)
- round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 (NCY5 NCETM Y6)
- solve number problems and practical problems that involve all of the above (NCY5 NCETM Y6)
- Pupils identify the place value in large whole numbers. (NCY5 NCETM Y6)
- round any whole number to a required degree of accuracy

Number – Addition and Subtraction, Multiplication and Division

- add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) (NCY5 NCETM Y6)
- add and subtract numbers mentally with increasingly large numbers (NCY5 NCETM Y6)
- use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy (NCY5 NCETM Y6)
- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why (NCY5 NCETM Y6)
- solve number and practical problems that involve all of the above
- perform mental calculations, including with mixed operations and large numbers
- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
- solve problems involving addition, subtraction, multiplication and division
- use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

Non Statutory Notes

NPV - Pupils use the whole number system, including saying, reading and writing numbers accurately.

NASMD - 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 (see [Mathematics Appendix 1](#)).

NASDM - They undertake mental calculations with increasingly large numbers and more complex calculations.

NASDM - 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.

Draw, compose and decompose shapes

- 6G–1 Draw, compose, and decompose shapes according to given properties, including dimensions, angles and area, and solve related problems.

Geometry – Properties of Shape

- draw 2-D shapes using given dimensions and angles
- recognise, describe and build simple 3-D shapes, including making nets
- compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons
- illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
- recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.

Non Statutory Notes

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, $d = 2 \times r$; $a = 180 - (b + c)$.

5	<p>Multiplication and division</p> <ul style="list-style-type: none"> 6AS/MD–2 Use a given additive or multiplicative calculation to derive or complete a related calculation, using arithmetic properties, inverse relationships, and place-value understanding. 2.18 Using equivalence to calculate 2.23 Multiplication strategies for larger numbers and long multiplication 2.24 Division: dividing by two-digit divisors 2.25 Using compensation to calculate 	<p>Number – Addition and Subtraction, Multiplication and Division</p> <ul style="list-style-type: none"> 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 solve number and practical problems that involve all of the above perform mental calculations, including with mixed operations and large numbers 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. identify common factors, common multiples and prime numbers (NC Y6 NCETM Y5) (Taught in 2022/23 only) <p>Number - Fractions</p> <ul style="list-style-type: none"> 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 <p>Non Statutory Notes</p> <p>NF - 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 improper and mixed fractions. (NC Y5 NCETM Y6)</p> <p>NASMD - 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 (see Mathematics Appendix 1).</p> <p>NASDM - They undertake mental calculations with increasingly large numbers and more complex calculations.</p> <p>NASDM - Pupils continue to use all the multiplication tables to calculate mathematical statements in order to maintain their fluency.</p>	
6	<p>Area, perimeter, position and direction</p> <ul style="list-style-type: none"> 2.30 Multiplicative contexts: area and perimeter 2 	<p>Measurement</p> <ul style="list-style-type: none"> recognise that shapes with the same areas can have different perimeters and vice versa (NC Y6 NCETM Y5) (Teach only 2022/23) recognise when it is possible to use formulae for area and volume of shapes (NC Y6 NCETM Y5) (Teach only 2022/23) calculate the area of parallelograms and triangles (NC Y6 NCETM Y5) (Teach only 2022/23) calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other units [for example, mm³ and km³]. (NC Y6 NCETM Y5) (Teach only 2022/23) <p>Geometry – Position and Direction</p> <ul style="list-style-type: none"> 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. <p>Non Statutory Notes</p> <p>GPD - Pupils draw and label a pair of 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.</p> <p>GPD - 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) being opposite vertices of a square of side d.</p>	
7	<p>Fractions and percentages</p> <ul style="list-style-type: none"> 6F–1 Recognise when fractions can be simplified, and use common factors to simplify fractions. 6F–2 Express fractions in a common denomination and use this to compare fractions that are similar in value. 6F–3 Compare fractions with different denominators, including fractions greater than 1, using reasoning, and choose between reasoning and common denomination as a comparison strategy. 	<p>Number – Fractions</p> <ul style="list-style-type: none"> add and subtract fractions with the same denominator and denominators that are multiples of the same number (NC Y4 5CETM Y6) 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 (NC Y5 NCETM Y6) 	

<ul style="list-style-type: none"> • 3.8 Common denomination: more adding and subtracting • 3.9 Multiplying fractions and dividing fractions by a whole number • 3.10 Linking fractions, decimals and percentages 	<ul style="list-style-type: none"> • solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25 (NC Y5 NCETM Y6) <p>Fractions</p> <ul style="list-style-type: none"> • use common factors to simplify fractions; use common multiples to express fractions in the same denomination • compare and order fractions, including fractions > 1 • add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions • multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$] • divide proper fractions by whole numbers [for example, $\frac{1}{3} \div 2 = \frac{1}{6}$] • associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $\frac{3}{8}$] • recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. <p>Non Statutory Notes</p> <p>NF - Pupils should be taught throughout that percentages, decimals and fractions are different ways of expressing proportions. (NC Y5 NCETM Y6)</p> <p>NF - Pupils should make connections between percentages, fractions and decimals (for example, 100% represents a whole quantity and 1% is $\frac{1}{100}$, 50% is $\frac{50}{100}$, 25% is $\frac{25}{100}$) and relate this to finding 'fractions of'. (NC Y5 NCETM Y6)</p> <p>MND - Common factors can be related to finding equivalent fractions</p> <p>NF - 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 example, if $\frac{1}{4}$ of a length is 36cm, then the whole length is $36 \times 4 = 144$cm). (NC Y6 NCETM Y5) (Taught in 2022/23 only)</p> <p>NF - 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, $\frac{1}{2} + \frac{1}{8} = \frac{5}{8}$) and progress to varied and increasingly complex problems.</p> <p>NF - 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.</p> <p>NF - They practise calculations with simple fractions and decimal fraction equivalents to aid fluency, including listing equivalent fractions to identify fractions with common denominators.</p> <p>Number - Fractions</p> <p>Non Statutory Notes</p> <p>NF - Pupils can explore and make conjectures about converting a simple fraction to a decimal fraction (for example, $3 \div 8 = 0.375$). For simple fractions with recurring 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. (NC Y6 NCETM Y5) (Taught in 2022/23 only)</p> <p>NF - 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. (NC Y6 NCETM Y5) (Taught in 2022/23 only)</p> <p>NF - Pupils also develop their skills of rounding and estimating as a means of predicting and checking the order of magnitude of their answers. (NC Y6 NCETM Y5) (Taught in 2022/23 only)</p> <p>M - Pupils connect conversion (for example, from kilometres to miles) to a graphical representation as preparation for understanding linear/proportional graphs (NC Y6 NCETM Y5) (Taught in 2022/23 only)</p> <p>M - They know approximate conversions and are able to tell if an answer is sensible. (NC Y6 NCETM Y5)</p>	
<p>8</p> <p>Statistics</p> <ul style="list-style-type: none"> • This topic is part of the National Curriculum but is not included in the DfE 2020 guidance or the NCETM Mastery PD Materials. 	<p>Statistics</p> <ul style="list-style-type: none"> • interpret and construct pie charts and line graphs and use these to solve problems • calculate and interpret the mean as an average. 	

		<p>Non Statutory Notes</p> <p>S - Pupils connect their work on angles, fractions and percentages to the interpretation of pie charts.</p> <p>S - Pupils both encounter and draw graphs relating two variables, arising from their own enquiry and in other subjects.</p> <p>S - They should connect conversion from kilometres to miles in measurement to its graphical representation.</p> <p>S - Pupils know when it is appropriate to find the mean of a data set</p>	
9	<p>Ratio and proportion</p> <ul style="list-style-type: none"> 6AS/MD–3 Solve problems involving ratio relationships. 2.27 Scale factors, ratio and proportional reasoning 	<p>Number – Multiplication and Division</p> <ul style="list-style-type: none"> MND - 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. (NC Y4 NCETM Y4, 5,6) <p>Ratio and Proportion</p> <ul style="list-style-type: none"> 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. <p>Non Statutory Notes</p> <p>MND - 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). (NC Y3 NCETM Y5,6)</p> <p>MND - 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. (NC Y4 NCETM Y6)</p> <p>RP - Pupils recognise proportionality in contexts when the relations between quantities are in the same ratio (for example, similar shapes and recipes).</p> <p>RP - Pupils link percentages or 360° to calculating angles of pie charts.</p> <p>RP - Pupils should consolidate their understanding of ratio when comparing quantities, sizes and scale drawings by solving a variety of problems. They might use the notation a:b to record their work.</p> <p>RP - 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</p>	
10	<p>Calculating using knowledge of structures (2)</p> <ul style="list-style-type: none"> 6AS/MD–2 Use a given additive or multiplicative calculation to derive or complete a related calculation, using arithmetic properties, inverse relationships, and place-value understanding. 1.29 Using equivalence and the compensation property to calculate 	<p>Number – Multiplication and Division</p> <ul style="list-style-type: none"> Pupils use and explain the equals sign to indicate equivalence, including in missing number problems (for example, $13 + 24 = 12 + 25$; $33 = 5 \times ?$). (NC Y5 NCETM Y6) <p>Non Statutory Notes</p>	
11	<p>Solving problems with two unknowns</p> <ul style="list-style-type: none"> 6AS/MD–4 Solve problems with 2 unknowns. 1.31 Problems with two unknowns 	<p>Algebra</p> <ul style="list-style-type: none"> use simple formulae generate and describe linear number sequences express missing number problems algebraically find pairs of numbers that satisfy an equation with two unknowns enumerate possibilities of combinations of two variables. <p>Non Statutory Notes</p>	

	<p>- 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:</p> <p>missing numbers, lengths, coordinates and angles -formulae in mathematics and science</p> <p>equivalent expressions (for example, $a + b = b + a$)</p> <p>generalisations of number patterns</p> <p>-number puzzles (for example, what two numbers can add up to)</p>	
12	<p>Order of operations</p> <ul style="list-style-type: none"> 2.22 Combining multiplication with addition and subtraction 2.28 Combining division with addition and subtraction 	<p>Number – Multiplication and Division</p> <ul style="list-style-type: none"> solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign (NC Y5 NCETM Y6) use their knowledge of the order of operations to carry out calculations involving the four operations <p>Non Statutory Notes</p> <p>NASMD - Pupils explore the order of operations using brackets; for example, $2 + 1 \times 3 = 5$ and $(2 + 1) \times 3 = 9$.</p>
13	<p>Mean average</p> <ul style="list-style-type: none"> 2.26 Mean average and equal shares 	<p>Statistics</p> <ul style="list-style-type: none"> calculate and interpret the mean as an average. <p>Non Statutory Notes</p> <p>S - Pupils know when it is appropriate to find the mean of a data set</p>

	1	2	3	4	5	6	7	8	9	10	11	12	13
C1	Unit 1 and Unit 10						Unit 2	Unit 3				Unit 4	
	Calculating using knowledge of structures (1)						Multiples of 1,000	Numbers up to 10,000,000				Draw, compose and decompose shapes	
	Calculating using knowledge of structures (2)							Unit 12 - Order of operations					
		Unit 11 - Solving problems with two unknowns						Unit 12 - Order of operations					
C2	Unit 4	Unit 5				Unit 6	Unit 7						
	Draw, compose and decompose shapes	Multiplication and division				Area, perimeter, position and direction	Fractions and percentages						
						Unit 13 - Mean average							
C3	Unit 8	Unit 9		SATS	Unit 10	Unit 11	Unit 12	Unit 13	*Unit 14*				
	Statistics	Ratio and proportion			Calculating using knowledge of structures (2)	Solving problems with two unknowns	Order of operations	Mean average	Further Application in real life contexts Bespoke inputs Further Investigations Becoming Year 7 Ready				

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