Maths Progression Document

2023-24

This document demonstrates that our maths curriculum, which is based upon WR, covers the NC and also incorporates Developmental Matters, Ready to Progress and Mastering Number FS2-Y2

Please see White Rose small steps progression documents for further lesson by lesson detail and CTK Calculation Progression for details of representations and methods

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Place Value: Counting

FS1	FS2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
• Counting like behaviours such as pointing/ marking • Finger rhymes and counting forwards and backwards • Rote counting • Counting objects to 10, one number per object • Knowing the last number said when counting tells how many there are	• Counting verbally beyond 10 (recognising patterns) • identify when it is appropriate to count and when groups can be subitised. • including counting from different starting numbers forwards and backwards	• Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number • Count numbers to 100 in numerals; • count in multiples of twos, fives and tens	• Count in steps of 2, 3, and 5 from 0, and in tens from any number, forwards and backwards	• Count from 0 in multiples of 4, 8, 50 and 100; • find 10 or 100 more or less • than a given number	• Count in multiples of 6, 7, 9, 25 and • 1000 (negative numbers moved to Y5)	• Count forwards or backwards in steps of powers of 10 for any given number up to 1000 000 • Count forwards and backwards with positive and negative whole numbers, including through zero	

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Place Value: Representing

FS1	FS2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
• Subitising within 3 • Finger numbers to 5	• Subitising to 5 • Conceptual Subitising between 5-10 • including those which show numbers within 10, in relation to 5 and 10 • Linking numeral names to quantities • Linking number symbols with counting and then quantities	• identify and represent numbers using objects and pictorial representations • read and write numbers to 100 in numerals • read and write numbers from 1 to 20 in numerals and words • Conceptual subitising with Rekenrek • explore the composition of the numbers 11–20, seeing representations which show the structure of these numbers as 'ten and a bit'	• read and write numbers to at least 100 in numerals and in words • identify, represent and estimate numbers using different representations, including the number line	• identify, represent and estimate numbers using different representations • read and write numbers up to 1000 in numerals and in words	• identify, represent and estimate numbers using different representations • read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value	• read, write, (order and compare) numbers to at least 1 000 000 and determine the value of each digit • read Roman numerals to 1000 (M) and recognise years written in Roman numerals	• read, write, (order and compare) numbers up to 10 000 000 and determine the value of each digit
•	•	1NPV-1 –count within 100, forwards and backwards, starting with any number Aut within 10 Spring within 20 then 50 • Summer within 100	• 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	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	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-		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).

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					digit numbers, and compose and decompose four-digit numbers using standard and non-standard partitioning		

Using PV to compare (incl. numberlines)

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FS1	FS2	Year1	Year2	Year3	Year4	Year5	Year6
• Compare perceptually quantities with a large difference, reducing difference • Compare quantities using language of more than and fewer than	• perceptual comparisons of smaller difference • Compare by matching – simple bar model • Understand 1 more and 1 less relationship • use the language of comparison, including 'more than' and 'fewer than0	• given a number, identify one more and one less • Comparing and ordering numbers (incl on numberline) • Understanding teen numbers • Using groups of tens and ones to 100 • review the composition of odd and even numbers, linking this to doubles and near doubles	• recognise the place value of each digit in a two-digit number (tens, ones) • compare and order numbers from 0 up to 100; use <, > and = signs • Numberline, incl estimates	• recognise the place value of each digit in a three-digit number (hundreds, tens, ones) • compare and order numbers up to 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 to 10,000, including placing on a numberline	• (read, write) order and compare numbers to at least 1 000 000 and determine the value of each digit • Powers of 10 • 10, 100, 1000, 10,0000 etc more/less • Comparing and ordering negative numbers	• (read, write), order and compare numbers up to 10 000 000 and determine the value of each digit • Powers of 10

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• compare numbers, reasoning about which is more, using both an understanding of the 'how many ness' of a number, and its position in the number system. • Developing a mental numberline	NPV-2 Reason about the location of numbers to 20 within the linear number system, including comparing using < > = • review the linear number system to 20, looking at a range of representations, including a number line • explore the use of 'midpoints' to enable them to identify the location of other numbers. (5 10, 15) • use the inequality symbol to create expressions, e.g. 7 > 2, and use the language of 'greater than' and 'less than' • reason about inequalities, drawing on their knowledge of the composition of numbers, e.g. Is this true or false? 3 and 2 is less than 4.	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 • review the linear number system to 100, applying their knowledge of midpoints to place numbers on a structured number line – they will identify the multiples of 10 that come before and after a given number.	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. (also in measure unit)	4 NPV-3 Reason about the location of any 4 digit number, including identifying the previous and next multiple of 1,000, 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.		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.

Using PV to round and solve problems

FS1	FS2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	•		• use place value and number facts to solve problems	• solve number problems and practical problems involving these ideas	• 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	• interpret negative numbers in context • round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 • solve number problems and practical problems that involve all of the above	• round any whole number to a required degree of accuracy • use negative numbers in context, and calculate intervals across zero • solve number and practical problems that involve all of the above

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Addition and Subtraction: recall and represent

FS1	FS2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6

Explore partitioning numbers into small groups and recombining them
 	
Exploration of all the ways to make 5
	• Composition of number into 2 parts
	
	• Composition of number in 3 parts
	
	• Automatic recall of number bonds 0-5 and some to 10, including doubles facts to 5
		• Use number bonds and related subtraction facts within 20
		  • Number bonds within 10
		  • To ten
		  • + - 1
		  • Doubles
		  • Near doubles
		  • Fact families
		• apply their knowledge of the composition of numbers, to calculations within 10 and 20.
		• Recalling Number bonds to 10
		• recalling additive facts within 20, applying their knowledge of the composition of numbers within 20 and strategies within 10
			recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100
			  • Bonds to 10
			  • Bonds to 20
			  • related facts
			  • Bonds to 100
			
			• focus on number bonds within 10 presented in the part-part-whole structure, including identifying a missing 'part' and relating this to subtraction equations
							•

	•	**NF-1** Develop fluency in addition and subtraction facts within 10 **1AS-1** Compose numbers to 10 from 2 parts and partition into parts recognizing odd and even numbers **1AS-2** Read, write and interpret equations containing +- = symbols and relate to real life experiences •	**2NF-1** Secure fluency in addition and subtraction facts within 10, through continued practice **2AS -1** Add and subtract across 10 **2AS- 2** recognise the subtraction structure of 'difference' **2AS-3** Add and subtract within 100 using related facts: and subtract only ones /tens from 2 digit number	**3NF–1** Secure fluency in addition and subtraction facts that bridge 10, through continued practice.			

Addition and Subtraction Calculations

See calculations policy for layout

FS1	FS2	Year 1	Year2	Year3	Year4	Year5	Year6
		• add and subtract one-digit and two digit numbers to 20, including zero • strategies for addition and subtraction within 10 and apply these to a range of questions, including written equations. • practise recalling additive facts within 20, applying their knowledge of the composition of numbers within 20 and strategies within 10.	• add and subtract numbers using concrete objects, pictorial representations, and mentally, including: • a two-digit number and ones • a two-digit number and tens • two two-digit numbers • adding three one-digit numbers • Use column methods when appropriate/efficient • show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot • apply their knowledge of the composition of 11–19 to calculations in which 10 is a part • apply their knowledge of composition to facts involving 3 addends • apply known facts to calculations involving larger numbers, e.g. 5 + 2, 15 + 2, 25 + 2. • become fluent in a range of strategies involving calculations within 20, using 'make 10' strategies to add, and subtracting through the tens boundary.	• add and subtract numbers mentally, including: • a three-digit number and ones • a three-digit number and tens • a three-digit number and hundreds • add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction (including 3 digit plus 2 digit and exchanges) • Application to calculations with money (+ - finding change)	• add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate (more than one exchange)	• add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) • add and subtract numbers mentally with increasingly large numbers	• perform mental calculations, including with mixed operations and large numbers • use their knowledge of the order of operations to carry out calculations involving the four operations

		1AS-1 Compose numbers to 10 from 2 parts, and partition numbers to 10 into parts, including recognising odd and even numbers 1AS-2 Read, write and interpret equations containing addition (+), subtraction (−) and equals (=) symbols, and relate additive expressions and equations to real-life contexts.	2AS-4 Add and subtract within 100 by applying related one digit addition and subtraction facts: add and subtract any 2 two digit numbers 2AS-2 Recognise the subtraction structure of 'difference' and answer questions of the form, "How many more…?" 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. 2AS-4 Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract any 2 two-digit numbers.	3AS–1 Calculate complements to 100. 3AS 2 Add and subtract u to three-digit numbers using column method 3AS-s inverse , part-part whole, commutative •	•	•	•

Addition and Subtraction Solving Problems (conditional) (please link with measure)

(use slow reveal as a technique, no number problem to reveal structures- Gareth)

FS1	FS2	Year1	Year2	Year3	Year4	Year5	Year6
Solve real world mathematical problems with numbers up to 5	Using story to represent addition and subtraction calculations with objects or pictures: First, then, now	• solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as • 7 = ? − 9 • Apply to money and measure • compare numbers within 20, including questions which use the symbols +, <, >, or =, such as: True or false? 10 + 4 < 14 10 + 4 = 14 10 + 4 > 14 1AS-2 Read, write and interpret equations containing addition (+), subtraction (−) and equals (=) symbols, and relate additive expressions and equations to real-life contexts.	• solve problems with addition and subtraction: • using concrete objects and pictorial representations, including those involving numbers, quantities and measures (e.g. finding change) • applying their increasing knowledge of mental and written methods • missing box 2AS–2 Recognise the subtraction structure of 'difference' and answer questions of the form, "How many more…?". (use a bar model to illustrate)	• solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction • (ensure missing number is in varied parts of the number sentence)	• solve addition and subtraction **two-step problems** in contexts, deciding which operations and methods to use and why	• solve addition and subtraction **multistep problems** in contexts, deciding which operations and methods to use and why	• solve addition and subtraction **multistep problems** in contexts, deciding which operations and methods to use and why

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Multiplication and Division: Recall, represent and use

FS2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	• Count in 2s, 5s and 10s • Make equal groups	• recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers • show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot	• recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables	• recall multiplication and division facts for multiplication tables up to 12 × 12 (see Explicit Multiplication teaching document) • use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; **multiplying together three numbers** • recognise and use factor pairs and commutativity in mental calculations	• identify **multiples and factors,** including finding all factor pairs of a number, and **common factors of two numbers** • know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers • **establish whether a number up to 100 is prime and recall prime numbers up to 19** • recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)	• identify common factors, **common multiples** and prime numbers • use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy

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		• 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	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. 2MD 1 repeated addition and representing as multiplication equations 2s 5s 10s 2MD- 2 grouping problems, number of groups unknown •	NF–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	• 4NF – 1 Recall Mult and div facts up to 12 x 12 and recognize products in multiplication tables as multiples of the same numbers	• 5NF–1 Secure fluency in multiplication table facts, and corresponding division facts, through continued practice.

Multiplication and Division: Calculate

	FS2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Doubles to 5	Equal shares and groups	• calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs	• 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 (portioning) and progressing to formal written method of short multiplication and bus stop division	• multiply and divide two-digit and three-digit numbers by a one-digit number using formal written layout of short multiplication and • bus stop method for division • multiply and divide by 10 and 100	• 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 bus stop short division and interpret remainders appropriately for the context • multiply and divide hole numbers and those involving decimals by 10, 100 and 1000	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 bus stop method, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context • perform mental calculations, including with mixed operations and large numbers • use their knowledge of the order of operations to carry out calculations involving the four operations

| | | | | **2MD–1** Recognise repeated addition contexts, representing them with multiplication equations and calculating the product, within the 2, 5 and 10 | **3MD–1** Apply known multiplication and division facts to solve contextual problems with different structures, including quotitive and partitive division.
3NF – 3 Apply place value knowledge to know facts (scaling | **4NF -2** Solve division problems with two digit dividends that involve remainders and interpret remainders

4NF-3 Apply place value knowledge for scaling
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. | **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.
5NF – 2 Scaling | |

Multiplication and Division: Solve Problems

FS1	FS2	Year1	Year2	Year3	Year4	Year5	Year6
		• solve one-step problems involving multiplication and division, by calculating the answer using **concrete objects, pictorial representations and arrays** with the support of the teacher	• solve problems involving multiplication and division, **using materials, arrays, repeated addition, mental methods**, and multiplication and division facts, including problems in contexts	• solve problems, including **missing number problems**, involving multiplication and division, including positive integer **scaling problems and correspondence problems** in which n objects are connected to m objects	• solve problems involving multiplying and adding, including using the **distributive law to multiply two digit numbers by one digit**, **integer scaling** problems and **harder correspondence problem**s such as n objects are connected to m objects	• solve problems involving multiplication and division including using their knowledge of **factors and multiples, squares and cubes** • solve problems involving multiplication and division, including **scaling by simple fractions** and problems involving simple rates	• solve problems involving addition, subtraction, multiplication and division • Interpret remainders according to the context (building to fractions and decimal remainders) • Application to Ratio

				• **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). •	• **3MD–1** Apply known multiplication and division facts to solve contextual problems with different structures, including quotitive and partitive division. •	• **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–2** Solve division problems, with two-digit dividends and one-digit divisors, that involve remainders, and interpret remainders appropriately according to the context.	• **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.	• **6AS/MD1** two numbers related additively or multiplicatively and quantify relationships • **6AS.MD-2** derive or complete a related calculation • **6AS/MD-3** Solve problems involving ratio • **6AS/MD-4** Solve problem with 2 unknowns •

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Fractions: Recognise, Write and Compare

FS1	FS2	Year1	Year2	Year3	Year4	Year5	Year6
	Share in 2 equal parts	• 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 • Know link halves and doubles	• recognise, find, name and write fractions $\frac{1}{3}$ $\frac{1}{4}$ $\frac{2}{4}$ $\frac{3}{4}$ of a length, shape, set of objects or quantity • Use fraction notation • Recognise the equivalence of $\frac{1}{2}$ and $\frac{2}{4}$	• 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 • recognise and show, using diagrams, equivalent fractions with small denominators • compare and order unit fractions, and fractions with the same denominators • **(Note: NC explicitly states tenths but decimals is non stat and not taught in WR until Y4 so tenths are referred to as fractions but not taught as decimals)**	• Note – need to introduce tenths more explicitly • count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. • recognise and show, using diagrams, families of common equivalent fractions • recognise mixed numbers and improper fractions and convert from one form to the other (WR)	• identify, name and write equivalent fractions of a given fraction, including tenths and hundredths • recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$ • compare and order fractions whose denominators are all multiples of the same number	• use common factors to simplify fractions; use common multiples to express fractions in the same denomination • compare and order fractions, including fractions > 1

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				3F-1 Interpret and write proper fractions to represent 1 or equal parts 3F–3 Reason about the location of any fraction within 1 in the linear number system.	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.	• 5F-2 Find equivalent fractions	6F-1 Recognise when fractions can be simplified 6F-2 express fractions as common denominators and use 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.

Fraction Calculations

FS1	FS2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			• write simple fractions for example, ½ of 6 = 3 • (bar model used)	• add and subtract fractions with the same denominator **within one whole**	• add and subtract fractions **with the same denominator** • Subtracting from a whole and mixed number • Note: We have added in: Find non-unit fractions of quantities	• add and subtract fractions with the same denominator and denominators that are **multiples of the same number** • Add and subtract mixed numbers (including breaking the whole) • multiply proper fractions and mixed numbers **by whole numbers,** supported by materials and diagrams (understand that it is the same as fractions of amounts) • Finding the whole	• 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 $\frac{1}{3} \div 2 = \frac{1}{6}$ • Apply fractions calculations in context of measure e.g. area and perimeter • Find whole amount

	•	• **3F–2** Find unit fractions of quantities using known division facts (multiplication tables fluency). (bar model used) • **3F-4** add and subtract fractions with the same denominator	• **4F–3** Add and subtract improper and mixed fractions with the same denominator, including bridging whole numbers. • **4F–2** Convert mixed numbers to improper fractions and vice versa.	• **5F–1** Find non-unit fractions of quantities	•

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Decimals: Read, write and compare

FS1	FS2	Yr1	Yr2	Year 3	Year 4	Year 5	Year 6
					• recognise and write decimal equivalents of any number of tenths or hundredths • recognise and write decimal equivalents to $\frac{1}{2}$ $\frac{1}{4}$ $\frac{3}{4}$ • round decimals with one decimal place to the nearest whole number • compare numbers with the same number of decimal places up to two decimal places	• read and write decimal numbers as fractions [for example, $0.71 = \frac{71}{100}$] • 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	• identify the value of each digit in numbers given to three decimal places
						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 decimals 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.	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.

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Decimal Calculation

FS1	FS2	Yr1	Yr2	Year 3	Year 4	Year 5	Year 6
					• 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 • Make a whole • solve simple measure and money problems involving fractions and decimals to two decimal places	• complements to 1 • Calculate (+ -) with decimals with different number of decimal places • Missing digit decimal computation • Multiplying by 10, 100, 1000	• associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, " ( ] • recall and use equivalences between simple fractions, decimals and percentages, including in different contexts • multiply and divide a decimal by an integer

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Fractions, Decimals and Percentages

FS1	FS2	Yr1	Yr2	Yr3	Yr4	Year 5	Year 6
						• recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal • solve problems which require knowing percentage and decimal equivalents $\frac{1}{2}$ $\frac{1}{4}$ $\frac{1}{5}$ $\frac{2}{5}$ $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25 **5F-3** Recall decimal fraction equivalents for ¼ , ½ , 1/5 and 1/10 and for multiples of these fractions	• 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 • Calculate percentage of amounts • Calculate whole when given part • Solve problems involving comparing amounts written as fractions, decimals and percentages

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Ratio and Proportion

FS1	FS2	Yr1	Yr2	Year 3	Year 4	Year 5	Year 6
							• solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts • solve problems involving the calculation/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
							• 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. • 6AS/MD-3 Solve problems involving ratio relationships.

Algebra (missing number and pattern)

FS1	FS2	Yr1	Yr2	Year 3	Year 4	Year 5	Year 6
Extend and create ABAB patterns – stick, leaf, stick, leaf. Notice and correct an error in a repeating pattern.	Continue, copy and create repeating patterns	• solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ? – 9 • (although not referred to as algebra)	• recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems	• solve problems, including missing number problems			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
		•	•	•			6AS/MD-4 Solve problems with 2 unknowns.

Using Measures

FS1	FS2	Yr1	Yr2	Year 3	Year 4	Year 5	Year 6
• Make direct comparisons between objects relating to size, length, weight and capacity.	• Compare length, weight and capacity and use language of longer, shorter, heavier, lighter • recognising when one quantity is greater than, less than or the same as the other quantity.	compare, describe and solve practical problems for: * lengths and heights * mass/weight * capacity and volume * time • measure and begin to record the following: * lengths and heights * mass/weight * capacity and volume * time (hours, minutes, seconds) • Measure using a cm ruler.	• measure, compare, order, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) • choose units of length • Use a ruler to nearest cm • Read scales in 1s, 2s, 5s 10s,	• measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) • equivalent lengths m and cm and cm and mm • Use a ruler in cm or mm and • cm and mm e.g. 7 cm and 5 mm • read unmarked scales between two know values • 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.	• Convert between different units of measure [for example, kilometre to metre; hour to minute] • estimate, compare and calculate different measures 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.	• convert between different units of metric measure • understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints • use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling 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. 5NPV-5 Convert between units of measure, including using common decimals and fractions.	• solve problems involving the calculation and conversion of units of measure, up to 3 d.p. • 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 3 d.p. • convert between miles and km 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.

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Money

FS1	FS2	Yr1	Yr2	Year 3	Year 4	Year 5	Year 6
	Unitise by paying for snack with 'coins' marked with subitising dots/values	• recognise and know the value of different denominations of coins and notes	• recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value • **find different combinations of coins that equal the same** amounts of money • solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change	• add and subtract amounts of money to give change, **using both £ and p** in practical contexts	• estimate, compare and calculate different measures, including money in pounds an d pence • Convert between pounds and pence • **Use decimal notation**	• use all four operations to solve problems involving measure [for example, money]	

Time

FS1	FS2	Yr1	Yr2	Year 3	Year 4	Year 5	Year 6
Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then...'	• Learn order of days of the week	• 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	• 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	• 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	• 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	• solve problems involving converting between units of time • Understanding and using timetables	

Perimeter, Area and Volume

FS1	FS2	Yr1	Yr2	Year 3	Year 4	Year 5	Year 6
				• **measure** the perimeter of simple 2-D shapes (Ensure confidence in using a ruler first)	• **measure and calculate** the perimeter of a rectilinear figure (including squares) in centimetres and metres and also of polygons • find the area of rectilinear shapes by counting squares then by **using formula (note: different than WR)** • 4G–2Identify 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.	• **measure and calculate** the perimeter **of composite rectilinear** shapes in centimetres and metres • calculate and compare the area of rectangles (including squares) and including using standard units, square centimetres (cm2) and square metres (m2) and **estimate the area of irregular shapes** • **estimate volume** [for example, using blocks to build cuboids] and capacity [for example, using water] 5G-2 Compare areas and calculate the area of rectangles (including squares) using standard units.	• recognise that shapes with the same areas can have different perimeters and vice versa • recognise when it is possible to use formulae for area and volume of shapes • calculate **the area of parallelograms and triangles** • **calculate**, estimate and compare **volum**e of cubes and cuboids using standard units, including cubic centimetres (cm3) and cubic metres (m3), and extending to other units 6G-1 Draw, compose, and decompose shapes according to given properties, including dimensions, angles and area, and solve related problems.

Geometry 2D and 3D shapes

FS1	FS2	Yr1	Yr2	Year 3	Year 4	Year 5	Year 6
Talk about and explore 2D and 3D shapes using informal and mathematical language: 'sides', 'corners'; 'straight', 'flat', 'round Combine shapes to make new ones – an arch, a bigger triangle Select shapes for building	Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can. Select, rotate and manipulate shapes to develop spatial reasoning skills	• recognise and name common 2-D and 3D shapes 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 articular orientations.	• identify and describe the properties of 2-D shapes, including the number of sides **and line symmetry in a vertical line** • identify 2-D shapes on the surface of 3-D shapes • compare and sort common 2-D shapes and everyday objects • recognise and name common 3-D shapes compare and sort common 3-D shapes and everyday objects	• draw 2-D shapes • make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them • 3G–2 Draw polygons by joining marked points, and identify parallel and perpendicular sides.	• compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes including angles • identify lines of symmetry in 2-D shapes presented in different orientations • 4G–1 Draw polygons, specified by coordinates in the first quadrant, and translate within the first quadrant. • 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. • 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.	• distinguish between regular and irregular polygons based on reasoning about equal sides and angles. • use the properties of rectangles to deduce related facts and find missing lengths and angles • (note – also apply to missing coordinates in first quadrant) • identify 3-D shapes, including cubes and other cuboids, from 2-D representations •	• draw 2-D shapes using given dimensions and angles • compare and classify geometric shapes based on their properties and sizes • illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius • recognise, describe and build simple 3-D shapes, including making nets 6G-1 Draw, compose, and decompose shapes according to given properties, including dimensions, angles and area, and solve related problems.

Geometry – Angles and Lines

Yr2	Year3	Year4	Year5	Year6
• identify and describe the properties of 2-D shapes, including the number of sides **and line symmetry in a vertical line**	• recognise angles as a property of shape or a description of a turn • identify right angles, recognise that two right angles make **a half-turn, three make three quarters** of a turn and four a complete turn; identify whether angles are **greater than or less than a right angle** • **identify horizontal and vertical lines** and pairs of perpendicular and parallel lines **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.	• **identify** acute and obtuse angles and compare and order angles up to two right angles by size • identify lines of symmetry in 2-D shapes presented in different orientations • complete a simple symmetric figure with respect to a specific line of symmetry • **(horizontal and vertical lines of symmetry)**	• know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles • **draw given angles, and measure them in degrees** • identify: • angles at a point and one whole turn (total 360°) • angles at a point on a straight line and ½ a turn (total 180°) • other multiples of 90° **5G-1** Compare angles, estimate and measure angles in degrees (°) and draw angles of a given size.	• find unknown angles in any triangles, quadrilaterals, and regular polygons • recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles

Geometry Position and Direction

FS1	FS2	Yr1	Yr2	Year3	Year4	Year5	Year6
Spatial Awareness - Experience different viewpoints e.g. construction, tangrams, making pictures with shapes describe things being 'in front of', 'behind', 'on top of' etc	• Select, rotate and manipulate shapes to develop spatial reasoning skill	• describe position, direction and movement, including whole, half, quarter and three-quarter turns	• 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)	•	• 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 • 4G-1 Draw polygons, specified by coordinates in the first quadrant, and translate within the first quadrant.	• identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed	• describe positions on the full coordinate grid (all four quadrants) • draw and translate simple shapes on the coordinate plane, and reflect them in the axes

Statistics

FS1	FS2	Yr1	Yr2	Year3	Year4	Year5	Year6
	• INfromal data collection through voting and weather data	Informal data collection through voting for books and collecting lunch orders	• interpret and construct simple pictograms, tally charts, block diagrams and simple tables	• interpret and construct simple pictograms, tally charts, block diagrams and simple tables	• interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs	• complete, read and interpret information in tables, including timetables	• interpret and construct pie charts and line graphs and use these to solve problems