Ox Close Federation
Maths Medium Term Planning
Year 5

Autumn

Topic	Suggested teaching weeks	White Rose Small Steps	Link to National Curriculum and N-Rich Problem Solving	Link to Ready to Progress documents	Vocabulary
Number **Place Value**	3 weeks	Step 1 Roman numerals to 1,000 Step 2 Numbers to 10,000 Step 3 Numbers to 100,000 Step 4 Numbers to 1,000,000 Step 5 Read and write numbers to 1,000,000 Step 6 Powers of 10 Step 7 10/100/1,000/10,000/100,000 more or less Step 8 Partition numbers to 1,000,000 Step 9 Number line to 1,000,000 Step 10 Compare and order numbers to 100,000 Step 11 Compare and order numbers to 1,000,000 Step 12 Round to the nearest 10, 100 or 1,000 Step 13 Round within 100,000 Step 14 Round within 1,000,000	read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit ・count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 ・interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero ・round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 ・solve number problems and practical problems that involve all of the above ・read Roman numerals to 1000 (M) and recognise years written in Roman numerals **Tug Harder! (G) *** **Space Distances *** **Roman Numerals ***	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. 5NF–2 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 1 tenth or 1 hundredth).	Powers of 10, 1-1,000,000, Negative integer

Number **Addition and subtraction**	2 weeks	Step 1 Mental strategies Step 2 Add whole numbers with more than four digits Step 3 Subtract whole numbers with more than four digits Step 4 Round to check answers Step 5 Inverse operations (addition and subtraction) Step 6 Multi-step addition and subtraction problems Step 7 Compare calculations Step 8 Find missing numbers	add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) ・add and subtract numbers mentally with increasingly large numbers ・use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy ・solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.		Formal written method
Number **Multiplication and division**	3 weeks	Step 1 Multiples Step 2 Common multiples Step 3 Factors Step 4 Common factors Step 5 Prime numbers Step 6 Square numbers Step 7 Cube numbers Step 8 Multiply by 10, 100 and 1,000 Step 9 Divide by 10, 100 and 1,000 Step 10 Multiples of 10, 100 and 1,000	・identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers ・know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers ・establish whether a number up to 100 is prime and recall prime numbers up to 19 ・multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers	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. 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. 5NF–1 Secure fluency in multiplication table facts, and corresponding division facts, through continued practice.	long multiplication, expanded method, compact method, remainders, factor pairs, composite number, prime number, prime factors, square number, cubed number, formal written method, square root

			▪ multiply and divide numbers mentally drawing upon known facts ▪ divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context ▪ multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3) ▪ solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes ▪ solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign ▪ solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates. **Shape Times Shape *** **Zios and Zepts *** **Satisfying Four Statements ***		
Number **Fractions A**	4 weeks	Step 1 Find fractions equivalent to a unit fraction Step 2 Find fractions equivalent to a non-unit fraction	▪ compare and order fractions whose denominators are all	5F–1 Find non-unit fractions of quantities.	Proper fractions, improper fractions, mixed number Percentage, per

| | | Step 3 Recognise equivalent fractions
Step 4 Convert improper fractions to mixed numbers
Step 5 Convert mixed numbers to improper fractions
Step 6 Compare fractions less than 1
Step 7 Order fractions less than 1
Step 8 Compare and order fractions greater than 1
Step 9 Add and subtract fractions with the same denominator
Step 10 Add fractions within 1
Step 11 Add fractions with total greater than 1 Step 12 Add to a mixed number
Step 13 Add two mixed numbers
Step 14 Subtract fractions
Step 15 Subtract from a mixed number
Step 16 Subtract from a mixed number – breaking the whole
Step 17 Subtract two mixed numbers | multiples of the same number
· identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths
· recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, 5 2 + 5 4 = 5 6 = 1 5 1]
· add and subtract fractions with the same denominator and denominators that are multiples of the same number · multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams

Fractional Wall * | 5F–2 Find equivalent fractions and understand that they have the same value and the same position in the linear number system | cent, half, quarter, one fifth, two fifths, etc. proportion of |

Spring

Topic	Suggested teaching weeks	White Rose Small Steps	Link to National Curriculum	Link to Ready to Progress documents	Vocabulary
Number **Multiplication and division B**	3 weeks	Step 1 Multiply up to a 4-digit number by a 1-digit number Step 2 Multiply a 2-digit number by a 2-digit number (area model) Step 3 Multiply a 2-digit number by a 2-digit number Step 4 Multiply a 3-digit number by a 2-digit number Step 5 Multiply a 4-digit number by a 2-digit number Step 6 Solve problems with multiplication Step 7 Short division Step 8 Divide a 4-digit number by a 1-digit number Step 9 Divide with remainders Step 10 Efficient division Step 11 Solve problems with multiplication and division	· identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers · know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers · establish whether a number up to 100 is prime and recall prime numbers up to 19 · multiply 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 · multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3) · solve problems involving multiplication and division	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. 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. 5MD–3 Multiply any whole number with up to 4 digits by any one-digit number using a formal written method. 5MD–3 Multiply any whole number with up to 4 digits by any one-digit number using a formal written method.	Formal written method

			including using their knowledge of factors and multiples, squares and cubes ꞏ solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign ꞏ solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.		
Number **Fractions B**	2 weeks	Step 1 Multiply a unit fraction by an integer Step 2 Multiply a non-unit fraction by an integer Step 3 Multiply a mixed number by an integer Step 4 Calculate a fraction of a quantity Step 5 Fraction of an amount Step 6 Find the whole Step 7 Use fractions as operators	ꞏ compare and order fractions whose denominators are all multiples of the same number ꞏ identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths ꞏ 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, 5 2 + 5 4 = 5 6 = 1 5 1] ꞏ add and subtract fractions with the same denominator and denominators that are multiples of the same number ꞏ multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams **Linked Chains *** **A4 Fraction Subtraction ***	5F–3 Recall decimal fraction equivalents for , , and , and for multiples of these proper fractions.	Proper fractions, improper fractions, mixed number Percentage, per cent, half, quarter, one fifth, two fifths, etc. proportion of

| Number **Decimals and percentages** | 3 weeks | Step 1 Decimals up to 2 decimal places
Step 2 Equivalent fractions and decimals (tenths) Step 3 Equivalent fractions and decimals (hundredths)
Step 4 Equivalent fractions and decimals
Step 5 Thousandths as fractions
Step 6 Thousandths as decimals
Step 7 Thousandths on a place value chart
Step 8 Order and compare decimals (same number of decimal places)
Step 9 Order and compare any decimals with up to 3 decimal places
Step 10 Round to the nearest whole number
Step 11 Round to 1 decimal place
Step 12 Understand percentages
Step 13 Percentages as fractions
Step 14 Percentages as decimals
Step 15 Equivalent fractions, decimals and percentages | ・read and write decimal numbers as fractions [for example, 0.71 = 100 71]
・recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents
・round decimals with two decimal places to the nearest whole number and to one decimal place
・read, write, order and compare numbers with up to three decimal places
・solve problems involving number up to three decimal places
・recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal
・solve problems which require knowing percentage and decimal equivalents of 2 1 , 4 1 , 5 1 , 5 2 , 5 4 and those fractions with a denominator of a multiple of 10 or 25.

Round the Dice Decimals 2 * | | Tenths, hundredths, thousandths, round, decimal, percentage, parts per hundred, equivalent. |
| Measurement **Perimeter and area** | 2 weeks | Step 1 Perimeter of rectangles
Step 2 Perimeter of rectilinear shapes
Step 3 Perimeter of polygons
Step 4 Area of rectangles
Step 5 Area of compound shapes
Step 6 Estimate area | ・convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) ・understand and use approximate equivalences between metric units and | 5G–2 Compare areas and calculate the area of rectangles (including squares) using standard units. | Reflex angles, dimensions Regular, irregular, polygons, Composite rectilinear Translate Adjacent Angles at a point, whole turn, straight line, multiples of 90 |

			common imperial units such as inches, pounds and pints ・ 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 1 cm3 blocks to build cuboids (including cubes)] and capacity [for example, using water] ・ solve problems involving converting between units of time ・ use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.		
Measurement **Statistics**	1 weeks	Step 1 Draw line graphs Step 2 Read and interpret line graphs Step 3 Read and interpret tables Step 4 Two-way tables Step 5 Read and interpret timetables	・ solve comparison, sum and difference problems using information presented in a line graph ・ complete, read and interpret information in tables, including timetables.		Y-axis, x-axis, line graph, intersect

Summer

Topic	Suggested teaching weeks	White Rose Small Steps	Link to National Curriculum	Link to Ready to Progress documents	Vocabulary
Geometry **Shape**	**3 weeks**	Step 1 Understand and use degrees Step 2 Classify angles Step 3 Estimate angles Step 4 Measure angles up to 180° Step 5 Draw lines and angles accurately Step 6 Calculate angles around a point Step 7 Calculate angles on a straight line Step 8 Lengths and angles in shapes Step 9 Regular and irregular polygons Step 10 3-D shapes	‧ 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 2 1 a turn (total 180o) - other multiples of 90o ‧ use the properties of rectangles to deduce related facts and find missing lengths and angles ‧ distinguish between regular and irregular polygons based on reasoning about equal sides and angles.	5G–1 Compare angles, estimate and measure angles in degrees (°) and draw angles of a given size. 5G–2 Compare areas and calculate the area of rectangles (including squares) using standard units.	Reflex angles, dimensions Regular, irregular, polygons, Composite rectilinear Translate Adjacent Angles at a point, whole turn, straight line, multiples of 90
Geometry **Position and direction**	**2 weeks**	Step 1 Read and plot coordinates Step 2 Problem solving with coordinates Step 3 Translation Step 4 Translation with coordinates Step 5 Lines of symmetry Step 6 Reflection in horizontal and vertical lines	‧ 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.		Line graph, timetable, interpret
Number **Decimals**	**3 weeks**	Step 1 Use known facts to add and subtract decimals within 1 Step 2 Complements to 1	‧ read and write decimal numbers as fractions [for example, 0.71 = 100 71] ‧	5NPV–1 Know that 10 tenths are equivalent to 1 one, and that 1 is 10 times the size of 0.1. Know	Decimals, tenths, hundredths, decimal place, complements

		Step 3 Add and subtract decimals across 1 Step 4 Add decimals with the same number of decimal places Step 5 Subtract decimals with the same number of decimal places Step 6 Add decimals with different numbers of decimal places Step 7 Subtract decimals with different numbers of decimal places Step 8 Efficient strategies for adding and subtracting decimals Step 9 Decimal sequences Step 10 Multiply by 10, 100 and 1,000 Step 11 Divide by 10, 100 and 1,000 Step 12 Multiply and divide decimals – missing values	recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents ・round decimals with two decimal places to the nearest whole number and to one decimal place ・read, write, order and compare numbers with up to three decimal places ・solve problems involving number up to three decimal places ・recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal ・solve problems which require knowing percentage and decimal equivalents of 2 1 , 4 1 , 5 1 , 5 2 , 5 4 and those fractions with a denominator of a multiple of 10 or 25.	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 nonstandard 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.	
Number **Negative numbers**	**1 week**	Step 1 Understand negative numbers Step 2 Count through zero in 1s Step 3 Count through zero in multiples Step 4 Compare and order negative numbers Step 5 Find the difference	・interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero		Negative numbers, difference
Measurement **Converting units**	**2 weeks**	Step 1 Kilograms and kilometres Step 2 Millimetres and millilitres Step 3 Convert units of length	・convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre;		Kilometre, metre, gram, kilogram, litre, millilitre, inches, pounds, pints, seconds, minutes, hours.

		Step 4 Convert between metric and imperial units Step 5 Convert units of time Step 6 Calculate with timetables	gram and kilogram; litre and millilitre) ・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		
Measurement **Volume**	**1 week**	Step 1 Cubic centimetres Step 2 Compare volume Step 3 Estimate volume Step 4 Estimate capacity	・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 1 cm3 blocks to build cuboids (including cubes)] and capacity [for example, using water]		Volume, imperial units, metric units, inches, pints, pounds, cubic units, bredth, interior area