

Woodlands mathematics curriculum plan

Year 5

Long term plan.

The LTP is a guide for what should be taught and when but this will change depending on the needs of your teaching group. If it is a weaker area then more time will need to be spent on the strand. If you feel your teaching group are secure then less time will be needed and you can then build in additional revision/consolidation or move on to the next strand. Use the LTP as a guide but ensure that the time spent on each strand matches the need of your teaching group.

The LTP does not include assessment weeks.

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number: Place value 4 weeks				Number: Addition and subtraction 2 weeks		Revision week	Number: Multiplication and division 3 weeks			Consolidation of Autumn term	

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13
Spring	Number: Multiplication and division 4 weeks				Number: Fractions 6 weeks						Number: Decimals and percentages 5 weeks		Consolidation of Spring and Autumn term

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11
Summer	Number: Decimals and percentages 5 weeks		Health and fitness week	Number: Decimals and percentages 5 weeks	Consolidation weeks - reinforce concepts taught through application, problem solving and reasoning. Measures and geometry						

Daily dashboard, daily sizzling 6 starters, daily reasoning challenges and weekly workouts revisit and keep simmering content children have already been taught. Areas to be also be taught through continuous provision and through cross-curricular links - statistics, measure, geometry, time, rapid recall of number facts.

Resource Links

[Vocabulary progression document](#)

[Year 1 maths mastery booklet](#)

[NCETM place value reasoning map with NRICH links](#)

[NCETM addition and subtraction reasoning map with NRICH links](#)

[NCETM multiplication and division reasoning map with NRICH links](#)

[NCETM fractions reasoning map with NRICH links](#)

[NCETM measurement reasoning map with NRICH links](#)

[NCETM Geometry – shape - reasoning map with NRICH links](#)

[NCETM Geometry – position - reasoning map with NRICH links](#)

[White Rose fluency, reasoning and problem solving documents](#)

[White Rose Autumn Mastery document](#)

[White Rose Spring Mastery document](#)

[White Rose Summer Mastery document](#)

[Blooms planning tool](#)

[Blooms questions KS1](#)

[White Rose end of block assessments](#)

[White Rose end of term assessments](#)

[White Rose reasoning problems Powerpoints](#)

[Place value within 10](#)

[Place value within 20](#)

[Place value to 50](#)

[Place value to 100](#)

[Addition and subtraction to 10](#)

[Addition and subtraction to 20](#)

[Length and height](#)

[Weight and volume](#)

[Multiplication and division](#)

[Fractions](#)

[Position and direction](#)

[Money](#)

[Time](#)

[Shape](#)

Medium term plan.

Autumn term

Number: Place value – 4 weeks

White Rose Small Steps

- Numbers to 10,000
- Roman numerals to 1,000
- Round to the nearest 10, 100 and 1,000
- Numbers to 100,000
- Compare and order numbers to 100,000
- Round numbers within 100,000
- Numbers to a million
- Counting in 10s, 100s, 1000s, 10,00s and 100,000s
- Compare and order numbers to one million
- Round numbers to one million
- Negative numbers

NCETM spines

Spine 1: Number, Addition and Subtraction

NCETM link

1.26 Composition and calculation: multiples of 1,000 up to 1,000,000

NCETM link

Teaching point 1: Understanding of numbers composed of hundred thousands, ten thousands and one thousands can be supported by making links to numbers composed of hundreds, tens and ones.

Teaching point 2: Multiples of 1,000 up to 1,000,000 can be placed in the linear number system by drawing on knowledge of the place of numbers up to 1,000 in the linear number system.

Teaching point 3: Numbers can be ordered and compared using knowledge of their composition and of their place in the linear number system.

Teaching point 4: Calculation approaches for numbers up to 1,000 can be applied to multiples of 1,000 up to 1,000,000.

National curriculum objectives

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, 1,000, 10,000 and 100,000

Solve number problems and practical problems that involve all of the above.

Read Roman numerals up to 1,000 (M) and recognise years written in Roman numerals.

Teaching point 5: Numbers can be rounded to simplify calculations or to indicate approximate sizes.

Teaching point 6: Known patterns can be used to divide 10,000 and 100,000 into two, four and five equal parts. These units are commonly used in graphing and measures.

1.27 Negative numbers: counting, comparing and calculating

[NCETM link](#)

Teaching point 1: Positive and negative numbers can be used to represent change.

Teaching point 2: Our number system includes numbers that are less than zero; these are negative numbers. Numbers greater than zero are positive numbers.

Teaching point 3: The negative/minus symbol (–) is placed before a numeral to indicate that the value is a negative number.

Teaching point 4: Negative numbers can be shown on horizontal scales; numbers to the left of zero are negative (less than zero) and numbers to the right of zero are positive (greater than zero). The larger the value of the numeral after the negative/minus symbol, the further the number is from zero.

Teaching point 5: Knowledge of the positions of positive and negative numbers in the number system can be used to calculate intervals across zero.

Teaching point 6: Negative numbers are used in coordinate and graphing contexts.

Number: Addition and subtraction – 2 weeks

White Rose Small Steps

- Add whole numbers with more than 4-digits (column method)
- Subtract whole numbers with more than 4 digits (column method)
- Round to estimate and approximate
- Inverse operations (addition and subtraction)
- Multi-step addition and subtraction problems

NCETM spines

Spine 1: Number, Addition and Subtraction

NCETM link

1.28 Common structures and the part–part–whole relationship

NCETM link

Teaching point 1: Mathematical relationships encountered at primary level are either additive or multiplicative; both of these can be observed within the structure of part–part–whole relationships.

Teaching point 2: Problems in many different contexts can be solved by adding together the parts to find the whole. Different strategies can be used to calculate the whole, but the structure of the problem remains the same.

Teaching point 3: If the value of the whole is known, along with the values of all but one of the parts, the value of the missing part can be calculated. Different strategies can be used to calculate the missing part, but the structure of the problem remains the same.

Teaching point 4: Problems in many different contexts have the ‘missing-part’ structure.

1.29 Using equivalence and the compensation property to calculate

NCETM link

Teaching point 1: If one addend is increased and the other is decreased by the same amount, the sum stays the same. (same sum)

National curriculum objectives

Add and subtract numbers mentally with increasingly large numbers.

Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction). 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.

Teaching point 2: If one addend is increased (or decreased) and the other is kept the same, the sum increases (or decreases) by the same amount. Teaching point 3: If the minuend and subtrahend are changed by the same amount, the difference stays the same. (same difference) Teaching point 4: If the minuend is increased (or decreased) and the subtrahend is kept the same, the difference increases (or decreases) by the same amount. Teaching point 5: If the minuend is kept the same and the subtrahend is increased (or decreased), the difference decreases (or increases) by the same amount. Teaching point 6: The value of the expressions on each side of an equals symbol must be the same; addition and subtraction are inverse operations. We can use this knowledge to balance equations and solve problems.	
Number: Multiplication and division – 3 weeks	
<u>White Rose Small Steps</u> • Multiples • Factors • Common factors • Prime numbers • Square numbers • Cube numbers • Multiply by 10, 100 and 1,000 • Divide by 10, 100 and 1,000 • Multiples of 10, 100 and 1,000 <u>Year 5 – NCETM spines</u> <u>Spine 2: Multiplication and Division</u> <u>NCETM link</u> 2.18 Using equivalence to calculate <u>NCETM link</u> Teaching point 1: For multiplication, if there is a multiplicative <i>increase</i> to one factor and a corresponding <i>decrease</i> to the other factor, the product stays the same.	<u>National curriculum objectives</u>

Teaching point 2: For division, if there is a multiplicative change to the dividend and a corresponding change to the divisor, the quotient stays the same.

2.19 Calculation: $\times/\div$ decimal fractions by whole numbers

[NCETM link](#)

Teaching point 1: Decimal fractions (with a whole number of tenths or hundredths) can be multiplied by a whole number by using known multiplication facts and unitising.

Teaching point 2: Multiplying by 0.1 is equivalent to dividing by 10; multiplying by 0.01 is equivalent to dividing by 100. Understanding of place value can be used to divide a number by 10/100: when a number is divided by 10, the digits move one place to the right; when a number is divided by 100, the digits move two places to the right.

Teaching point 3: To multiply a single-digit number by a decimal fraction with up to two decimal places, convert the decimal fraction to an integer by multiplying by 10 or 100, perform the resulting calculation using an appropriate strategy, then adjust the product by dividing by 10 or 100.

Teaching point 4: If the multiplier is less than one, the product is less than the multiplicand; if the multiplier is greater than one, the product is greater than the multiplicand.

Teaching point 5: To divide any decimal fraction with up to two decimal places by a single-digit number, convert the decimal fraction to an integer by multiplying by 10 or 100, perform the resulting calculation using an appropriate strategy, then adjust the quotient by dividing by 10 or 100.

2.20 Multiplication with three factors and volume

[NCETM link](#)

Teaching point 1: Volume is the amount of space that something occupies.

Teaching point 2: Volume is measured in cubic units, such as cubic centimetres (cm^3) and cubic metres (m^3).

Teaching point 3: The volume of a cuboid can be calculated by multiplying the length, width and height.

Teaching point 4: Both the commutative law and the associative law can be applied when multiplying three or more numbers.

Teaching point 5: The choice of which order to multiply in can be made according to the simplest calculation.

Multiply and divide numbers mentally drawing upon known facts.

Multiply and divide whole numbers by 10, 100 and 1,000

Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.

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 knowledge of factors and multiples, squares and cubes.

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

2.21 Factors, multiples, prime numbers and composite numbers

[NCETM link](#)

Teaching point 1: Factors are positive integers that can be multiplied together to equal a given number.

Teaching point 2: Systematic methods can be used to find all factors of a number; factors come in pairs; all positive integers have an even number of factors apart from square numbers, which have an odd number of factors; numbers with more than two factors are called composite numbers.

Teaching point 3: Prime numbers are positive integers that have exactly two factors.

Teaching point 4: A common factor is a factor that is shared by two or more numbers. A prime factor is a factor that is also a prime number.

Teaching point 5: A multiple of a number is the product of that number and an integer; a common multiple is a multiple that is shared by two or more numbers.

Teaching point 6: The factor pairs of '100' can be used to support efficient calculation.

2.22 Combining multiplication with addition and subtraction

[NCETM link](#)

Teaching point 1: Multiplication can be combined with addition and subtraction; when there are no brackets, multiplication is completed before addition or subtraction; when there are brackets, the calculation within the brackets is completed first.

Teaching point 2: When adding or subtracting multiplication expressions that have a common factor, the distributive law can be applied.

Multiply and divide numbers mentally drawing upon known facts.

Multiply numbers up to 4 digits by a one or two digit number using a formal written method, including long multiplication for 2-digit numbers.

Divide numbers up to 4 digits by a 1-digit number using the formal written method of short division and interpret remainders appropriately for the context.

Solve problems involving addition and subtraction, multiplication and division and a combination of these, including understanding the use of the equals sign.

Spring term

Number: Multiplication and division – 4 weeks

White Rose Small Steps

- Multiply 4-digits by 1-digit
- Multiply 2-digits (area model)
- Multiply 2-digits by 2-digits
- Multiply 3-digits by 2-digits
- Multiply 4-digits by 2-digits
- Divide 4-digits by 1-digit
- Divide with remainders

National curriculum objectives

Multiply and divide numbers mentally drawing upon known facts.

Multiply numbers up to 4 digits by a one or two digit number using a formal written method, including long multiplication for 2-digit numbers.

Divide numbers up to 4 digits by a 1-digit number using the formal written method of short division and interpret remainders appropriately for the context.

Solve problems involving addition and subtraction, multiplication and division and a combination of these, including understanding the use of the equals sign.

Number: Fractions – 6 weeks

White Rose Small Steps

- Equivalent fractions
- Improper fractions to mixed numbers
- Mixed numbers to improper fractions
- Number sequences
- Compare and order fractions less than 1
- Compare and order fractions greater than 1
- Add and subtract fractions
- Add fractions within 1
- Add 3 or more fractions
- Add fractions
- Add mixed numbers
- Subtract fractions
- Subtract mixed numbers
- Subtract breaking the whole
- Subtract 2 mixed numbers
- Multiply unit fractions by an integer
- Multiply non-unit fractions by an integer
- Multiply mixed numbers by integers
- Fraction of an amount
- Using fractions as operators

Year 5 – NCETM spines

Spine 3: Fractions

[NCETM link](#)

3.7 Finding equivalent fractions and simplifying fractions

[NCETM link](#)

Teaching point 1: When two fractions have different numerators and denominators to one another but share the same numerical value, they are called ‘equivalent fractions’.

National curriculum objectives

Compare and order fractions whose denominators are 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 $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$]

Add and subtract fractions with the same denominator and denominators that are multiples of the same number.

Teaching point 2: Equivalent fractions share the same proportional (multiplicative) relationship between the numerator and denominator. Equivalent fractions can be generated by maintaining that relationship through the process of multiplication and division. Teaching point 3: Fractions can be simplified by dividing both the numerator and denominator by a common factor. 3.8 Common denomination: more adding and subtracting NCETM link Teaching point 1: In order to add related fractions, first convert one fraction so that both share the same denominator (a '<i>common denominator</i>'). Teaching point 2: To subtract related fractions, first convert one fraction so that both share a common denominator. Teaching point 3: The common denominator method can be extended to adding and subtracting non unit related fractions. Teaching point 4: To add and subtract <i>non-related</i> fractions, the product of the two denominators provides a common denominator. Teaching point 5: Converting to common denominators is one of several methods that can be used to compare fractions.	Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams. Read and write decimal numbers as fractions [for example $0.71 = \frac{71}{100}$] Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.
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Number: Decimals and percentages – 5 weeks	
White Rose Small Steps Unit 1 and unit 2 • Decimals up to 2 decimal points • Decimals as fractions (1) • Decimals as fractions (2) • Understand thousandths • Thousandths as decimals • Rounding decimals • Order and compare decimals	National curriculum objectives

- Understand percentages
- Percentages as fractions and decimals
- Equivalent fractions, decimals and percentages
- Adding decimals within 1
- Subtracting decimals within 1
- Complements to 1
- Adding decimals – crossing the whole
- Adding decimals with the same number of decimal places
- Adding decimals with a different number of decimal places
- Adding and subtracting wholes and decimals
- Decimal sequences
- Multiplying decimals by 10, 100 and 1,000
- Dividing decimals by 10, 100 and 1,000

Read, write, order and compare numbers with up to three decimal places.

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.

Solve problems involving number up to three decimal places.

Recognise the percent 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 $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25

	Recognise and write decimal equivalents of any number of tenths or hundredths. Find the effect of dividing a one or two digit number by 10 or 100, identifying the value of the digits in the answer as ones, tenths and hundredths <u>Solve simple measure</u> and money problems involving fractions and decimals to two decimal places. Convert between different units of measure [for example, kilometre to metre]
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Summer term

Number: Decimals and percentages – 5 weeks	
White Rose Small Steps <u>Unit 1</u> and <u>unit 2</u> • Decimals up to 2 decimal points • Decimals as fractions (1) • Decimals as fractions (2) • Understand thousandths • Thousandths as decimals	<u>National curriculum objectives</u>

- Rounding decimals
- Order and compare decimals
- Understand percentages
- Percentages as fractions and decimals
- Equivalent fractions, decimals and percentages
- Adding decimals within 1
- Subtracting decimals within 1
- Complements to 1
- Adding decimals – crossing the whole
- Adding decimals with the same number of decimal places
- Adding decimals with a different number of decimal places
- Adding and subtracting wholes and decimals
- Decimal sequences
- Multiplying decimals by 10, 100 and 1,000
- Dividing decimals by 10, 100 and 1,000

Read, write, order and compare numbers with up to three decimal places.

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.

Solve problems involving number up to three decimal places.

Recognise the percent 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 $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25

Recognise and write decimal equivalents of any number of tenths or hundredths.

Find the effect of dividing a one or two digit number by 10 or 100, identifying the value of the digits in the answer as ones, tenths and hundredths

Solve simple measure and money problems involving fractions and decimals to two decimal places.

Convert between different units of measure [for example, kilometre to metre]

Measurement: Volume – 1 week

White Rose Small Steps

- What is volume?
- Compare volume
- Estimate volume
- Estimate capacity

National curriculum objectives

Estimate volume [for example using 1cm^3 blocks to build cuboids (including cubes)] and capacity [for example, using water]

Use all four operations to solve problems involving measure.

Measurement: Perimeter and area – 2 weeks

White Rose Small Steps

- Measure perimeter
- Calculate perimeter
- Area of rectangles
- Area of compound shapes
- Area of irregular shapes

National curriculum objectives

Measure and calculate the perimeter of composite rectilinear shapes in cm and m.

Calculate and compare the area of rectangles (including squares), and including using standard units, cm^2 , m^2 estimate the area of irregular shapes.

Statistics – 2 weeks	
<u>White Rose Small Steps</u> • Read and interpret line graphs • Draw line graphs • Use line graphs to solve problems • Read and interpret tables • Two-way tables • Time tables	<u>National curriculum objectives</u> Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs. Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs. Solve comparison, sum and difference problems using information presented in a line graph. Complete, read and interpret information in tables including timetables.

Geometry: position and direction – 2 weeks

White Rose Small Steps

- Position in the first quadrant
- Reflection
- Reflection with coordinates
- Translation
- Translation with coordinates

National curriculum objectives

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.

Geometry: Properties of shape – 3 weeks

White Rose Small Steps

- Measuring angles in degrees
- Measuring with a protractor (1)
- Measuring with a protractor (2)
- Drawing lines and angles accurately
- Calculating angles on a straight line
- Calculating angles around a point
- Calculating lengths and angles in shapes
- Regular and irregular polygons
- Reasoning about 3-D shapes

National curriculum objectives

Identify 3-D shapes, including cubes and other cuboids, from 2-D representations.

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.

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 $\frac{1}{2}$ a turn (total 180°) other multiples of 90°

Measurement: Converting units – 2 weeks

White Rose Small Steps

- Kilograms and kilometres
- Milligrams and millilitres
- Metric units
- Imperial units
- Converting units of time
- Timetables

National curriculum objectives

Convert between different units of metric measure [for example, km and m; cm and m; cm and mm; g and kg; l and ml]

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.