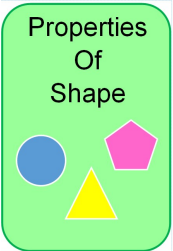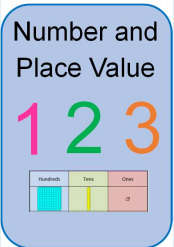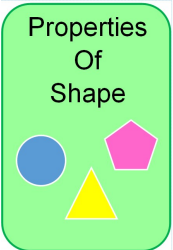|	Fluency Declarative/substantive	Methods Procedural/disciplinary	Reasoning and problem solving Conditional	Retrieval
Year 1 Autumn Place value Number and Place Value 1 2 3	**I know:** • collections of objects can be sorted. • To count a specific number of objects from a larger group. • How to represent real-life objects using manipulatives. • Numbers can be recognised as words. • To count on from any number. • That 1 more is the number after • To count backwards within 10. • That 1 less is the number before. • match one object with another to compare groups. • To describe whether there are "fewer", "more" or the "same" number of objects. • That numbers can be compared. • How to order objects and numbers. **Fluent in Five** Counting in multiples Read and write numbers Compare and order numbers Finding more or less Place value in numbers. Number bonds and known facts (addition and subtraction) Mental and written addition and subtraction. Known multiplication and division facts. Fraction of numbers.	<u>I know how to:</u> fluently count to 10 when counting objects. compare numerical values using the vocabulary "less than", "greater than" or "equal to" alongside the symbols <, > and = Use a number line.	Recognise and create repeating patterns with objects and with shapes.	Number formation. Geometry (shape) <u>Resources/staff subject knowledge:</u> White Rose Classroom Secrets Thinking Toms NCETM - National Curriculum Resource Tool | NCETM <u>Vocabulary</u> More Less Fewer More Same Less than Greater than Equal to

	Fluency Declarative/substantive	Methods Procedural/disciplinary	Reasoning and problem solving Conditional	Retrieval
Year 1 Autumn Addition and subtraction Addition and Subtraction + −	**I know:** • How to identify the parts and whole • A whole group of objects can be composed of two or more parts and that they can represent this using a part-whole model. • How to write number sentences • Addition fact families • Number bonds within 10 • To work systematically to identify all the number bonds within 10. • To work systematically to identify all the number bonds to 10. • the idea of addition • that if we add together then we are bringing two or more parts together to create a whole. • That when "adding more" the focus is on increasing one quantity by a given amount. • Use of number bonds to identify missing parts. • When to use the subtraction symbol. • To find all eight facts within a fact family. • Subtraction is "taking away". • To record subtraction in a number sentence. **Fluent in Five** Counting in multiples Read and write numbers Compare and order numbers Finding more or less Place value in numbers. Number bonds and known facts (addition and subtraction) Mental and written addition and subtraction. Known multiplication and division facts. Fraction of numbers.	<u>**I know how to:**</u> Use the method of counting back to find the answers to subtraction calculations. How to add or subtract 1 or 2. Add and subtract one-digit and two-digit numbers to 20, including zero.	To solve addition problems. Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations and missing number problems such as $7 = ? - 9$.	Count numbers to 100 in numerals; count in multiples of twos, fives and tens. Read and write numbers to 100 in numerals. Given a number, identify one more and one less. Geometry (shape)

Vocabulary
Parts
Whole
Fact families
Part whole model
Fact family
Take away.
Counting back

	Fluency Declarative/substantive	Methods Procedural/disciplinary	Reasoning and problem solving Conditional	Retrieval
Year 1 Autumn Shape Properties Of Shape	**I know:** - The names of 3-D shapes. - How to sort 3 – D shapes using similarities and differences. - The names of 2-D shapes. - How to sort 2 – D shapes according - to simple properties, including type, size and colour. - That repeating patterns can be made using 2-D and 3-D shapes. **Fluent in Five** Counting in multiples Read and write numbers Compare and order numbers Finding more or less Place value in numbers. Number bonds and known facts (addition and subtraction) Mental and written addition and subtraction. Known multiplication and division facts. Fraction of numbers.	**I know how to:** Recognise and name common 2-D shapes [for example, rectangles (including squares), circles and triangles] Recognise and make common 3-D shapes [for example, cuboids, (including cubes), pyramids and spheres]	Handle common 2-D and 3-D shapes, naming these and related everyday objects fluently. Recognise shapes in different orientations and sizes, and know that rectangles, triangles, cuboids and pyramids are not always similar to each other.	Add and subtract one-digit and two-digit numbers to 20, including zero. Geometry (shape) **Resources/staff subject knowledge:** White Rose Classroom Secrets Thinking Toms NCETM - National Curriculum Resource Tool | NCETM **Vocabulary** Rectangle, Square Circle Triangle Cuboids Cubes Pyramids Spheres. Similarities Differences Properties Size Colour Repeating pattern.

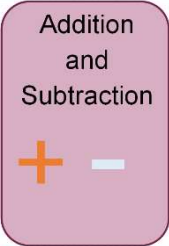|	Fluency Declarative/substantive	Methods Procedural/disciplinary	Reasoning and problem solving Conditional	Retrieval
Year 2 **Autumn** Place value Number and Place Value **1 2 3**	**I know:** • Numbers to 20 can be represented using a range of manipulatives. • By making 10s we can count objects to 100. • Tens and ones are used to make numbers to 20. • A place value chart can be used to represent two-digit numbers. • Numbers to 100 can be partitioned into tens and ones. • Numbers to 100 can be written in words. • Numbers to 100 can be partitioned flexibly. • Numbers to 100 can be partitioned using the expanded form. • 10s can be placed on a number line up to 100. • A number line to 100 can be split into 10s and 1s. • Estimating can help to calculate the divisions on a number line to 100. • Numbers can be compared using objects and the language of greater than and less than. • Numbers can be compared using the language of greater than and less than. • Objects and numbers can be ordered using the language, most, fewest, least, and greatest. • When counting, you can count in 2s, 5s and 10s. • Concrete resources can help when counting in 3s. **Fluent in Five** adding/subtracting a two-digit number and ones or a two-digit number and ten. adding and subtracting a two-digit number and tens. Children will also continue to be exposed to adding and subtracting two-digit numbers and ones. Adding and subtracting two, two-digit numbers where the answer is above 50. Addition, with questions involving adding two, two-digit numbers which cross the tens boundary.	**I know how to:** Count in steps of 2, 3 and 5 from 0, and in tens from any number, forward and backward. 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. 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.	Use place value and number facts to solve problems.	Count to and across 100, forwards and backwards, beginning with 0 or 1. Count in multiples of two, fives and tens. Read and write numbers from 1 to 20 in numerals and words. Given a number identify one more and one less. Geometry (shape)
				Resources/staff subject knowledge: White Rose Classroom Secrets Thinking Toms NCETM - National Curriculum Resource Tool | NCETM **Vocabulary** count in steps, count in multiples, place value, estimate, compare.

	Fluency Declarative/substantive	Methods Procedural/disciplinary	Reasoning and problem solving Conditional	Retrieval
Year 2 Autumn Addition and subtraction Addition and Subtraction	**I know:** • Bonds to 10 • Fact families using addition and subtraction. • That number bonds within 10 can be used to identify related facts for both addition and subtraction. • Bonds to 100 • 1's can be added and subtracted • Number bonds to 10 can be used to help add numbers within 20. • Three one-digit numbers can be added. • Number bonds to 10 can support adding to the next 10. • That numbers can be added across a 10. • That numbers can be subtracted across a 10. • One-digit numbers can be subtracted from any multiple of 10 within 100. • A one-digit number can be subtracted from a 2-digit number across a 10. • 10 more and 10 less can be found from a given number within 100. • Multiples of 10 can be added and subtracted from a given number within 100. • Two 2-digit numbers can be added. • Two 2-digit numbers can be subtracted. • Questions can be a mix of addition and subtraction. • Number sentences can be compared. **Fluent in Five** adding/subtracting a two-digit number and ones or a two-digit number and ten. adding and subtracting a two-digit number and tens. Children will also continue to be exposed to adding and subtracting two-digit numbers and ones. Adding and subtracting two, two-digit numbers where the answer is above 50. Addition, with questions involving adding two, two-digit numbers which cross the tens boundary.	**I know how to:** Add and subtract numbers using concrete objects, pictorial representations. Mental addition and subtraction including: A two-digit number and ones, a two-digit number and tens, two two-digit numbers and adding three one-digit numbers.	Solve problems with addition and subtraction using concrete objects and pictorial representations including those involving numbers, quantities, and measures. Applying their increasing knowledge of mental and written methods. Missing number problems.	Count in steps of 2, 3 and 5 from 0, and in tens from any number, forward and backward. Read and write numbers to at least 100 in numerals and in words. Compare and order numbers from 0 up to 100; use <,> and = signs. Geometry (shape)
				Resources/staff subject knowledge: White Rose Classroom Secrets Thinking Toms NCETM - National Curriculum Resource Tool	NCETM **Vocabulary** Fact family Number bonds Addition Subtraction More Less Missing number

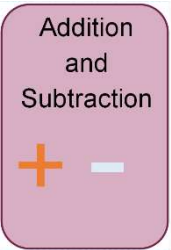|	Fluency Declarative/substantive	Methods Procedural/disciplinary	Reasoning and problem solving Conditional	Retrieval
Year 2 Autumn Shape Properties Of Shape 	**I know:** • The names of common 2-D and 3-D shapes. • How to count the sides on 2-D shapes. • How to count vertices on 2-D shapes. • To use my knowledge of the properties • of shapes to accurately draw 2-D shapes. • To identify that a shape is symmetrical, both sides are the same. • To complete shapes to use the lines of symmetry. • To sort and group 2-D shapes according to simple properties, including size and colour, and more formal properties, such as number of sides and vertices. • To identify the 2-D shapes that make up the faces of 3-D shapes, including identifying pyramids according to the shape of their base. • What an edge is and that it is formed where two faces meet. • To count the vertices on 3-D shapes. • 3-D shapes can be sorted in a variety of ways. • That identifying and naming shapes will help describe patterns accurately. **Fluent in Five** Counting in multiples Read and write numbers Compare and order numbers Finding more or less Place value in numbers. Number bonds and known facts (addition and subtraction) Mental and written addition and subtraction. Known multiplication and division facts. Fraction of numbers.	**I know how to:** Identify and describe the properties of 2-D shapes, including the number of sides and line of symmetry in a vertical line. Identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid] Compare and sort common 2-D shapes and everyday objects, Recognise and name common 3-D shapes [for example, cuboids (including cubes), pyramids and spheres]	Compare and sort common 3-D shapes and everyday objects.	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 and adding three one-digit numbers. Geometry (shape) **Resources/staff subject knowledge:** White Rose Classroom Secrets Thinking Toms NCETM - National Curriculum Resource Tool | NCETM **Vocabulary** Sides Vertices Symmetrical Properties Faces Edge Sorting Patterns Circle Cylinder Triangle Pyramid Vertical Cuboids Cubes Sphere

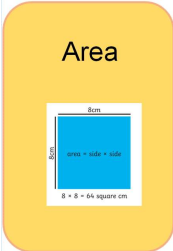|	Fluency Declarative/substantive	Methods Procedural/disciplinary	Reasoning and problem solving Conditional	Retrieval
Year 3 **Autumn** Place value Number and Place Value 1 2 3	**I know:** • 100 can be represented using a range of manipulatives. • Numbers to 100 can be partitioned. • Numbers to 100 can be places on a number line. • You can count in hundreds. • 1000 can be represented using a range of manipulatives. • Numbers to 1000 can be partitioned. • Numbers to 1000 can be partitioned flexibly. • Numbers can be partitioned into hundreds, tens and ones. • You can find 1, 10 or 100 more or less than a given number. • Numbers to 1000 can be places on a number line. • The position of numbers on a number line can be estimated. • Numbers to 1000 can be compared. • Numbers to 1000 can be ordered. • You can count in 50's. **Fluent in Five** **Mental methods** Adding a two-digit number and ones or tens Number bonds and facts to 20. Multiplication facts for the two, five and four times table. Mental addition and subtraction. Mental multiplication focuses on the 2, 3, 5, 8 and 10 times table. Mental addition and subtraction involve adding and subtracting using place value skills. **Written methods** Addition within 100, involving the tens boundary being crossed. Division based on the five times table. Written addition and subtraction Written multiplication focuses on the 4 times table beyond 12 x 4. Written addition and subtraction involve 3-digit numbers with at least one exchange being required.	**I know how to:** Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number. Identify, represent and estimate numbers using different representations. Read and write numbers up to 1000 in numerals and words. Recognise the place value of each digit in a three-digit number (hundreds, tens, ones) Compare and order numbers up to 1000.	Solve number problems and practical problems involving these ideas.	Partitioning two-digit numbers Read and write numbers to 100 in numerals and words. Compare and order numbers from 0-100 using <, > and = Read and write numbers to at least 100 in numerals and in words. Geometry (shape) **Resources/staff subject knowledge:** White Rose Classroom Secrets Thinking Toms NCETM - National Curriculum Resource Tool | NCETM **Vocabulary** Ascending Descending 10 or 100 more 10 or 100 less hundreds.

	Fluency Declarative/substantive	Methods Procedural/disciplinary	Reasoning and problem solving Conditional	Retrieval
Year 3 Autumn Addition and subtraction Addition and Subtraction + –	**I know:** • 10 can be made using number bonds. • 1 can be added or subtracted from any number. • 10 can be added or subtracted from any number. • 100 can be added or subtracted from any number. • Patterns can be spotted when adding or subtracting 1, 10 and 100. • When adding 1's to a 3-digit number we cross the 10's. • When adding multiples of 10 to any 3-digit number we are required to cross the next hundred. • When subtracting a 1-digit number form a 3-digit number we are required to cross the next 10. • When subtracting a one-digit number from a 3-digit number we are required to cross the next 10. • When subtracting 10s from any 3-digit number it can include crossing a 100. • Connections can be made when adding and subtracting 1s, 10s and 100s to/from 3-digit numbers. • Two number can be added with no exchange. • Two numbers can be subtracted with no exchange, • Two numbers can be added with the need for an exchange. • Two numbers can be subtracted with the need for an exchange. • A 2-digit and a 3-digit number can be added. • A 2-digit number can be subtracted from a 3-digit number. • 100 can be made using numbers that complement each other. • Estimating can be used when adding and subtracting. • There is an inverse relationship between addition and subtraction. **Fluent in Five** **Mental methods** Adding a two-digit number and ones or tens Number bonds and facts to 20. Multiplication facts for the two, five and four times table. Mental addition and subtraction. Mental multiplication focuses on the 2, 3, 5, 8 and 10 times table. Mental addition and subtraction involve adding and subtracting using place value skills. **Written methods** Addition within 100, involving the tens boundary being crossed. Division based on the five times table. Written addition and subtraction Written multiplication focuses on the 4 times table beyond 12 x 4. Written addition and subtraction involve 3-digit numbers with at least one exchange being required.	**I know how to:** Add and subtract numbers mentally, including a three-digit number and a ones, a three-digit number and a tens, a three-digit number and hundreds. Add and subtract numbers with up to three digits, using formal written methods or columnar addition and subtraction. Decisions need to be made about which operation to use.	Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.	Recall and use multiplication and division facts for the 2, 5 and 10 tables. Recognise odd and even numbers. Show that multiplication of two numbers can be done in any order (commutative) Geometry (shape) **Resources/staff subject knowledge:** White Rose Classroom Secrets Thinking Toms NCETM - National Curriculum Resource Tool	NCETM **Vocabulary** Column addition column subtraction exchange estimate.

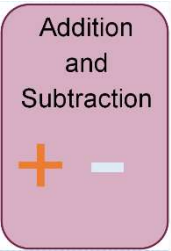|	Fluency Declarative/substantive	Methods Procedural/disciplinary	Reasoning and problem solving Conditional	Retrieval
Year 3 **Autumn** Multiplication and division A. Multiplication and Division X ÷	**I know:** • Equal groups have the same number of objects. • Arrays show the link between repeated addition and multiplication. • Counting in 2s link to the 2 times-table. • There are links between the 5 and 10 times-table. • Division can be done by grouping or sharing. • Counting in 3s can help to calculate the 3 times-table. • Dividing by 3 can be done by sharing into 3 equal groups and by grouping into 3s. • To become more fluent in the 3 times-table I use my knowledge of multiplying and dividing by 3. • The 2 times-table can support when multiplying by 4. • Dividing by 4 can be done through sharing into 4 equal groups and grouping into 4s. • To become more fluent in the 4 times-table I use my knowledge of multiplying and dividing by 4. • The 4 times-table can support when multiplying by 8. • Dividing by 8 can be done through sharing into 8 equal groups and grouping into 8s. • To become more fluent in the 8 times-table I use my knowledge of multiplying and dividing by 8. • Connections can be made between the 2, 4 and 8 times-table. **Fluent in Five** **Mental methods** Adding a two-digit number and ones or tens Number bonds and facts to 20. Multiplication facts for the two, five and four times table. Mental addition and subtraction. Mental multiplication focuses on the 2, 3, 5, 8 and 10 times table. Mental addition and subtraction involve adding and subtracting using place value skills. **Written methods** Addition within 100, involving the tens boundary being crossed. Division based on the five times table. Written addition and subtraction Written multiplication focuses on the 4 times table beyond 12 x 4. Written addition and subtraction involve 3-digit numbers with at least one exchange being required.	**I know how to:** Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. Division can be done by grouping or sharing. Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods.	Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.	Recall and use multiplication and division facts for the 2, 5 and 10 tables. Recognise, find, name and write $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects ort quantity. Geometry (shape)
				Resources/staff subject knowledge: White Rose Classroom Secrets Thinking Toms NCETM - National Curriculum Resource Tool | NCETM **Vocabulary** Exchange, mathematical statements, missing number problems, integer scaling problems, correspondence problems, derived facts.

	Fluency Declarative/substantive	Methods Procedural/disciplinary	Reasoning and problem solving Conditional	Retrieval
Year 4 Autumn Place value Number and Place Value 1 2 3	**I know:** 1000 can be represented using a range of manipulatives • Numbers to 1000 can be partitioned. • Numbers to 1000 can be placed on a number line. • You can count in thousands. • 10,000 can be represented using a range of manipulatives. • Numbers to 10,000 can be partitioned. • Numbers to 10,000 can be partitioned flexibly. • Numbers can be partitioned into thousands, hundreds, tens and ones. • You can find 1, 10, 100 or 1000 more or less than a given number. • Numbers to 10,000 can be placed on a number line. • The position of numbers on a number line can be estimated. • Numbers to 10,000 can be compared. • Numbers to 10,000 can be ordered. • Roman numerals from 1 to 12 • on a clock face, and that L represents 50 and C represents 100. • Numbers can be rounded to the nearest 10. • Numbers can be rounded to the nearest 100. • Numbers can be rounded to the nearest 1000. **Fluent in Five** **Mental methods** Count in multiples Read and write numbers Compare and order numbers Find 10, 100 more or less. Place Value in numbers. Negative numbers. Number bonds and known facts Mental addition and subtraction Multiplication facts and division facts Fractions of numbers Decimals Equivalent fractions. **Written methods** Written addition and subtraction Calculations with fractions	**I know how to:** Count in multiples of 6, 7, 9, 25 and 1000. Count backwards through zero to include negative numbers. 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 zero and place value. Find 1000 more or less than a given number. Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens and ones) Order and compare numbers beyond 1000. 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.	Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number. Read and write numbers up to 1000 in numerals and words. Recognise the place value of each digit in a three-digit number (hundreds, tens, ones) Geometry (shape)

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Resources/staff subject knowledge:
White Rose
Classroom Secrets
Thinking Toms
NCETM - National Curriculum Resource Tool | NCETM

Vocabulary
Ascending
Descending
Thousands
Compare
Partitioned
Rounding

	Fluency Declarative/substantive	Methods Procedural/disciplinary	Reasoning and problem solving Conditional	Retrieval
Year 4 Autumn Addition and subtraction Addition and Subtraction + −	**I know:** • 1, 10, 100 and 1000 can be added or subtracted from any number. • That 3- or 4-digit numbers can be added with no exchanges. • To use concrete resources as well as the formal written method when adding. • That two 4-digit numbers can be added with an exchange. • That two 4-digit numbers can be added with more than one exchange. • That a 4-digit number can be subtracted from a 4-digit with no exchanges. • That a 4-digit number can be subtracted from a 4-digit an exchange. • That a 4-digit number can be subtracted from a 4-digit with more than one exchange. • That I can make choices about which method is most appropriate when subtracting. • That we can estimate by rounding to the nearest ten, hundred and thousand.	**I know how to:** Add and subtract numbers with up to 4 digits, using the formal written methods of columnar addition and subtraction where appropriate. To use concrete resources as well as the formal written method when adding. That the inverse can be used as a checking strategy.	Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.	Recall and use multiplication and division facts for the 2, 5 and 10 tables. Recognise odd and even numbers. Show that multiplication of two numbers can be done in any order (commutative)Geometry (shape)
	Fluent in Five **Mental methods** Count in multiples Read and write numbers Compare and order numbers Find 10, 100 more or less. Place Value in numbers. Negative numbers. Number bonds and known facts Mental addition and subtraction Multiplication facts and division facts Fractions of numbers Decimals Equivalent fractions. **Written methods** Written addition and subtraction Calculations with fractions			**Resources/staff subject knowledge:** White Rose Classroom Secrets Thinking Toms NCETM - National Curriculum Resource Tool | NCETM **Vocabulary** Column addition column subtraction exchange estimate rounding inverse appropriate method

	Fluency Declarative/substantive	Methods Procedural/disciplinary	Reasoning and problem solving Conditional	Retrieval
Year 4 Autumn Area 	• That area is the amount of space taken up by a two-dimensional shape or surface. • That area can be calculated by counting squares. • That given a number of squares, rectilinear shapes can be made. • That the area of shapes can be compared. **Fluent in Five** **Mental methods** Count in multiples Read and write numbers Compare and order numbers Find 10, 100 more or less. Place Value in numbers. Negative numbers. Number bonds and known facts Mental addition and subtraction Multiplication facts and division facts Fractions of numbers Decimals Equivalent fractions. **Written methods** Written addition and subtraction Calculations with fractions	**I know how to:** Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres. Find the area of rectilinear shapes by counting squares.	They relate area to arrays and multiplication.	Add and subtract numbers with up to 4 digits, using the formal written methods of columnar addition and subtraction where appropriate. Geometry (shape) **Resources/staff subject knowledge:** White Rose Classroom Secrets Thinking Toms NCETM - National Curriculum Resource Tool | NCETM **Vocabulary** Area Space Squares Rectilinear Greater than Less than Equal to. Measure Calculate Centimetres Metres

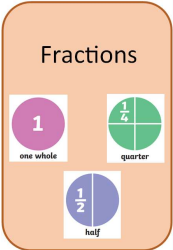|	Fluency Declarative/substantive	Methods Procedural/disciplinary	Reasoning and problem solving Conditional	Retrieval
Year 4 Autumn Multiplication and division Multiplication and Division X ÷	• Counting in 3s link to the 3 times-table. • That the 6 times-table is double the 3 times-table. • That each multiple of 6 is double the corresponding multiple of 3. • Counting in 9s link to the 9 times-table. • strategies such as using the 10 times-table to derive the 9 times-table and understand that each multiple of 9 is triple the equivalent multiple of 3. • To make links between the 3, 6 and 9 times-tables. • Counting in 7s link to the 7 times-table. • That partitioning multiplication facts is a strategy to identify the 7 times table. • Counting in 11s link to the 11 times-table. • That partitioning 11 into 10 and 1 is a strategy to identify the 11 times table. • Counting in 12s link to the 12 times-table. • That partitioning 12 into 10 and 2 is a strategy to identify the 12 times table. • When multiplying a number by 1, the result will always be the number itself. • when multiplying any number by zero the result is always zero. • That commutativity helps when multiplying 3 numbers. **Fluent in Five** **Mental methods** Count in multiples Read and write numbers Compare and order numbers Find 10, 100 more or less. Place Value in numbers. Negative numbers. Number bonds and known facts Mental addition and subtraction Multiplication facts and division facts Fractions of numbers Decimals Equivalent fractions. **Written methods** Written addition and subtraction Calculations with fractions	**I know how to:** Recall multiplication and division facts for multiplication tables up to 12 x 12 Use place value, known and derived facts to multiply and divide mentally, including multiplying by 0 and 1; dividing by 1; multiplying together three numbers. Recognise and use factor pairs and commutativity in mental calculations. Multiply two-digit and three-digit numbers by a one-digit number using formal written layout. That partitioning multiplication facts is a strategy to identify multiples.	Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects	Measure and calculate the perimeter of a rectilinear figure. Geometry (shape) **Resources/staff subject knowledge:** White Rose Classroom Secrets Thinking Toms NCETM - National Curriculum Resource Tool | NCETM **Vocabulary** Multiplication Division Place value Factor pairs Commutative Tables Multiple

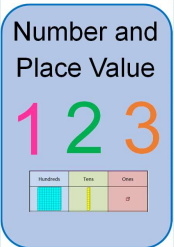|	Fluency Declarative/substantive	Methods Procedural/disciplinary	Reasoning and problem solving Conditional	Retrieval
Year 5 Autumn Place Value Number and Place Value **1 2 3**	• Roman numerals to 1,000, and the symbols for 500 (D) and 1000 (M). • 10,000 can be represented using a range of manipulatives. • Numbers to 100,000 can be placed on a number line. • Numbers to 1,000,000 can be represented using a range of manipulatives. • Numbers to 1,000,000 can be written in words. • Powers of 10 using place value charts and Gattegno charts. • That you can find 10/100/1,000/10,000/100,000 more or less than a given number. • Numbers to 1,000,000 can be partitioned. • Where a given number would lie on a number line to 1,000,000. • Numbers to 100,000 can be compared and ordered. • Numbers to 1,000,000 can be compared and ordered. • Numbers can be rounded to the nearest 10, 100 or 1,000. • To round any number within 100,000 to the nearest 10, 100, 1,000 or 10,000. • To round any number up to 1,000,000 to any power of 10 up to 100,000. **Fluent in Five** Counting in multiples Reading and writing numbers Finding 10, 100 more or less Place value in numbers Negative numbers Mental addition and subtraction Written addition and subtraction Known multiplication and division facts Squares and cubes Fractions of numbers Decimals Types of fractions Calculating with fractions.	**I know how to:** Count forwards and backwards in steps of powers of 10 for any given number up to 1,000,000 Count forwards and backwards with positive and negative whole numbers including through zero. Read right (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 to at least 1 000 000 and determine the value of each digit. 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.	Count in multiples of 6, 7, 9, 25 and 1000 Count backwards through zero to include negative numbers. Find 1000 more or less than a given number. Geometry (shape)
				Resources/staff subject knowledge: White Rose Classroom Secrets Thinking Toms NCETM - National Curriculum Resource Tool | NCETM **Vocabulary** Manipulatives Number line Power of 10 Gattegno chart Partitioned. Less than Greater than Equal to Ascending Descending.

	Fluency Declarative/substantive	Methods Procedural/disciplinary	Reasoning and problem solving Conditional	Retrieval
Year 5 Autumn Addition and subtraction Addition and Subtraction + −	**I know:** • That mental strategies can be used to calculate sums and differences using partitioning. • Column addition can be used to add whole numbers with more than four digits. • That the column method for subtraction can be used to subtract whole numbers with more than four digits. • Rounding can be used to estimate the answers to both additions and subtractions. That addition and subtraction are inverse Operations. • Addition is commutative and subtraction is not. • To solve addition and subtraction problems with more than one step. • Calculations can be compared. **Fluent in Five** Counting in multiples Reading and writing numbers Finding 10, 100 more or less Place value in numbers Negative numbers Mental addition and subtraction Written addition and subtraction Known multiplication and division facts Squares and cubes Fractions of numbers Decimals Types of fractions Calculating with fractions.	**I know how to:** 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.	To solve missing number problems by comparing calculations. Solve addition and subtraction multi step problems in contexts, deciding which operations and methods to use and why. Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.	Round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 and 100,000. (Read, write) order and compare numbers to at least 1 000 000 and determine the value of each digit. Geometry (shape)
				Resources/staff subject knowledge: White Rose Classroom Secrets Thinking Toms NCETM - National Curriculum Resource Tool | NCETM **Vocabulary** Mental strategies Sum Differences Partitioning column addition column subtraction rounding estimate inverse operations comparison missing number

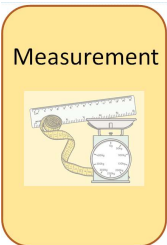|	Fluency Declarative/substantive	Methods Procedural/disciplinary	Reasoning and problem solving Conditional	Retrieval
Year 5 Autumn Multiplication and division A Multiplication and Division X ÷	**I know:** • that a multiple of a number is any number that is in its times-table. • Common multiples can be found for any pair of numbers. • the relationship between multiplication and division and understand the words "factor" and "multiple". • that numbers with exactly two factors are called prime numbers. • numbers with more than two factors are called composite numbers. • prime numbers up to 19. • Manipulatives can be used to build square numbers. • that a cube number is the result of multiplying a whole number by itself and then by itself again. • Whole numbers can be multiplied by 10, 100 and 1000. • Whole numbers can be divided by 10, 100 and 1000. • To multiply and divide by multiples of 10, 100 and 1,000. **Fluent in Five** Counting in multiples Reading and writing numbers Finding 10, 100 more or less Place value in numbers Negative numbers Mental addition and subtraction Written addition and subtraction Known multiplication and division facts Squares and cubes Fractions of numbers Decimals Types of fractions Calculating with fractions.	**I know how to:** Identify multiples and factors, including finding all factor pairs over number, and common factors of two numbers. Know and use the vocabulary of prime numbers, prime factors, and composite (non-prime) numbers. Establish whether in 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 and cubed. Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.	Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes.	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. Geometry (shape) **Resources/staff subject knowledge:** White Rose Classroom Secrets Thinking Toms NCETM - National Curriculum Resource Tool | NCETM **Vocabulary** Multiplication/ Division Factor pairs Commutative Multiple Prime Square Cube Composite Common multiples.

	Fluency Declarative/substantive	Methods Procedural/disciplinary	Reasoning and problem solving Conditional	Retrieval
Year 5 Autumn Fractions A Fractions 1 one whole ¼ quarter ½ half	**I know:** • unit fractions can be expressed in other forms (including fractions of shapes, number lines and fraction walls). • To find fractions that are equivalent to a non-unit fraction. • fractions are equivalent and can identify the multiplicative relationship between the numerator and denominator. • That improper fractions can be converted to mixed numbers. • To convert from mixed numbers to improper fractions by identifying how many of the equal parts each whole is worth and using this to work out how many equal parts are needed for the integer part of the mixed number. • Fractions can be compared where the denominators are the same or where one denominator is a multiple of the other. • Fractions less than 1 can be ordered. • Fractions greater than 1 can be compared and ordered. • Fractions with the same denominator can be added and subtracted. • Fractions with different denominators can be added within 1. • To add fractions where one denominator is a multiple of the other, where the total is greater than 1. • That you can add either a whole number part or a fractional part to a mixed number. • two mixed numbers can be added by adding the wholes and fractional parts separately. • to subtract fractions where one denominator is a multiple of the other. • To subtract from a mixed number. • To subtract from a mixed number where it crosses the whole. • To subtract 2 mixed numbers. **Fluent in Five** Counting in multiples Reading and writing numbers Finding 10, 100 more or less Place value in numbers Negative numbers Mental addition and subtraction Written addition and subtraction Known multiplication and division facts Squares and cubes Fractions of numbers Decimals Types of fractions Calculating with fractions.	**I know how to:** 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, 2/5 + 4/5 = 6/5 = 1 1/5] Compare and order fractions whose denominators are all multiples of the same number. Add and subtract fractions with the same denominator and denominators that are multiples of the same number.		Identify multiples and factors, including finding all factor pairs over number, and common factors of two numbers. Know and use the vocabulary of prime numbers, prime factors, and composite (non-prime) numbers. Establish whether in number up to 100 is prime and recall prime numbers up to 19. Geometry (Shape)
				Resources/staff subject knowledge: White Rose Classroom Secrets Thinking Toms NCETM - National Curriculum Resource Tool | NCETM **Vocabulary** Equivalent fractions Tenths Hundredths Mixed numbers Improper fractions Convert Denominator Numerator Multiples

	Fluency Declarative/substantive	Methods Procedural/disciplinary	Reasoning and problem solving Conditional	Retrieval
Year 6 Autumn **Place value** Number and Place Value 1 2 3	**I know:** • 1,000,000 can be represented using a range of manipulatives. • 10,000,000 can be represented using a range of manipulatives. • Numbers to 10,000,000 can be written in words. • To identify integers that are 10, 100, 1,000 times the size, or one-tenth, one-hundredth, one-thousandth the size of other integers. • Numbers to 10,00,000 can be placed on a number line. • Integers up to 10,000,000 can be compared and ordered, • To round any integer • The number line extends beyond zero. **Fluent in Five** Counting in multiples Reading and writing numbers Finding 10, 100 more or less Place value in numbers Negative numbers Mental addition and subtraction Written addition and subtraction Known multiplication and division facts Squares and cubes Order of operations Fractions of numbers Decimals Types of fractions Calculating with fractions. Percentage of numbers.	**I know how to:** Read, write, (order and compare) numbers to 10 000 000 and determine the value of each digit. (read, write), order and compare numbers up to 10 000 000 and determine the value of each digit. Round any whole number to a required degree of accuracy. Use negative numbers in context and calculate intervals across zero.	Solve number and practical problems that involve all of the above.	Count forwards and backwards in steps of powers of 10 for any given number up to 1,000,000 Count forwards and backwards with positive and negative whole numbers including through zero. Read right (order and compare) numbers to at least 1,000,000 and determine the value of each digit. Geometry (shape) **Resources/staff subject knowledge:** White Rose Classroom Secrets Thinking Toms NCETM - National Curriculum Resource Tool | NCETM **Vocabulary** 10,000,000 Manipulatives Integer Power of 10 Ascending Descending. Zero Rounding

	Fluency Declarative/substantive	Methods Procedural/disciplinary	Reasoning and problem solving Conditional	Retrieval
Year 6 Autumn Addition, subtraction, multiplication and division. Addition and Subtraction + − Multiplication and Division X ÷	**I know:** • To add and subtract integers with any number of digits. • To work systematically to find the complete list of factors of a number. • To find common multiples of two or more numbers. • Rules of divisibility from looking at patterns in times-tables. • That a number is prime when it has exactly two factors: 1 and itself. • The prime numbers to 100. • To use the correct notations for square and cubed numbers. • To multiply numbers with up to four digits by 2-digit numbers using long multiplication. • To solve problems with multiplication. • To perform short divisions both with integer answers and where there is a remainder. • To divide by a 2-digit number using repeated division. • Long division is used for numbers that cannot be factorised into single-digit numbers. • To find the most appropriate strategy when dividing. • Which operation to use when solving problems that involve more than one operation. • The order of priority for operations in a calculation: • When appropriate to use mental strategies and estimation. • How to reason given known facts. **Fluent in Five** Counting in multiples Reading and writing numbers Finding 10, 100 more or less Place value in numbers Negative numbers Mental addition and subtraction Written addition and subtraction Known multiplication and division facts Squares and cubes Order of operations Fractions of numbers Decimals Types of fractions Calculating with fractions. Percentage of numbers.	**I know how to:** Perform mental calculations, including with mixed operations and large numbers. Use my knowledge of the order of operations to carry out calculations involving the four operations. 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. Multiply multi-digit numbers up to 4 digits by a two-digit whole number using a formal written method of long multiplication. Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret reminders as whole number remainders, fractions, or by rounding, as appropriate for the context. Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context. Perform mental calculations, including with mixed operations and large numbers. Use their knowledge of the order of operations to carry out calculations involving the four operations.	Solve addition and subtraction multi step problems in contexts, deciding which operations and methods to use and why. Solve problems involving addition, subtraction, multiplication and a division.	Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) Identify multiples and factors, including finding all factor pairs over number, and common factors of two numbers. Know and use the vocabulary of prime numbers, prime factors, and composite (non-prime) numbers.
				Resources/staff subject knowledge: White Rose Classroom Secrets Thinking Toms NCETM - National Curriculum Resource Tool | NCETM **Vocabulary** Multiply Integer Divide Long division/ short division Order of operations Estimate Reason Prime Fator Cube Square

	Fluency Declarative/substantive	Methods Procedural/disciplinary	Reasoning and problem solving Conditional	Retrieval
Year 6 Autumn Fractions A Fractions B 	**I know:** • to recognise when fractions are, and are not, in their simplest form. • Using a number line supports counting forwards and backwards in fractions and to find equivalent fractions. • to find a common denominator in order to compare. • To compare and order fractions with the same numerator. • where one denominator is a multiple of the other to use equivalent fractions to add and subtract fractions. • To add and • Subtract fractions where the denominators are not multiples of each other. • Two mixed numbers can be added together. • Two mixed numbers can be subtracted. • Problems can involve more than one calculation. • That multiplying fractions by integers is the same as repeated addition of a fraction. • To use concrete and pictorial representations when multiplying a fraction by a fraction. • Fractions can be divided where the numerator is a multiple of the integer they are dividing by. • to divide fractions where the numerator is not a multiple of the integer they are dividing by. • I can select the appropriate operation when calculating with fractions. • Bar models support when representing unit and non-unit fractions of an amount. **Fluent in Five** Counting in multiples Reading and writing numbers Finding 10, 100 more or less Place value in numbers Negative numbers Mental addition and subtraction Written addition and subtraction Known multiplication and division facts Squares and cubes Order of operations Fractions of numbers Decimals Types of fractions Calculating with fractions. Percentage of numbers.	**I know how to:** Use common factors to simplify fractions; use common multiples to express fractions in the same denomination. Compare and order fractions, including fractions > 1 Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions. Multiply simple pairs of proper fractions, writing the answer in its simplest form. [for example, $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$] Divide proper fractions by whole numbers [for example $\frac{1}{3} \div 2 = \frac{1}{6}$]		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, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$] **Resources/staff subject knowledge:** White Rose Classroom Secrets Thinking Toms NCETM - National Curriculum Resource Tool | NCETM **Vocabulary** Equivalent fractions Tenths Hundredths Mixed numbers Improper fractions Convert Denominator Numerator Multiples integer

	Fluency Declarative/substantive	Methods Procedural/disciplinary	Reasoning and problem solving Conditional	Retrieval
Year 6 Autumn Converting Units 	**I know:** • All metric measures for length, mass and capacity. (recognise, read and write). • How to convert between metric measurements of length and mass. • Which operation to select when calculating with measures. • The relationship between some imperial and metric units of measurement. (miles and kilometres) • The following facts: • 1 inch ≈ 2.5 cm • 1 foot = 12 inches • 1 pound = 16 ounces • 1 stone = 14 pounds • 1 gallon = 8 pints	**I know how to:** Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from smaller units of measure to a larger unit, and vice versa, using decimal notation to up to 3.d.p. Convert between miles and kilometres. Use, read, write and convert between standard units, converting measurements of time from a smaller unit of measure to a larger unit, and vice versa.	Solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3d.p. where appropriate.	Geometry (shape) **Resources/staff subject knowledge:** White Rose Classroom Secrets Thinking Toms NCETM - National Curriculum Resource Tool | NCETM **Vocabulary** Metric Imperial Capacity Length Mass Miles Kilometres