WCPS Mathematics Curriculum Overview 2025-2026

WYMONDHAM COLLEGE PREP SCHOOL

WCPS Curriculum Intent for Mathematics

At Wymondham College Prep School, we embed an ethos and culture of mathematics as a subject which is loved and enjoyed by all learners, where children recognise it as being central to an all-round education, and where all children have the belief that they can develop as a mathematician whether it be gaining confidence in basic fluency and skills or deepening understanding and being challenged to reason, investigate and solve increasingly complex problems.

At Wymondham College Prep School we will:

- stimulate curiosity, interest in and enjoyment of Mathematics and a determination to learn and to learn from one's mistakes,
- encourage breadth of experience in the development of mathematical skills,
- encourage the development of investigative thinking and the application of mathematical knowledge,
- develop pupils' ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation,
- ensure that pupils read, spell and pronounce mathematical vocabulary correctly and understand their meaning.

WCPS Mathematics Curriculum: EYFS – Year 6

WYMONDHAM COLLEGE PREP SCHOOL

EYFS Statutory Framework Maths Related Objectives
Number • Have a deep understanding of number to 10, including the composition. • Subitise (recognise quantities without counting) up to 5 • Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts. Numerical patterns • Verbally count beyond 20, recognising the pattern of the counting system • Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity • Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally

EYFS Mathematics Curriculum		
Autumn Term	Spring Term	Summer Term
Match, sort and compare Measure and Patterns It's me 1,2,3 Circles and triangles 1,2,3,4,5 Shapes with 4 sides Core Knowledge 1. Pupils will know some positional language (in front, behind, next to)	Alive in 5 Mass and capacity Growing 6,7,8 Length, height and time Building 9 and 10 Explore 3D shapes Core Knowledge 1. Pupils will know what 0 means 2. Pupils will know how to compare numbers to 5	To 20 and beyond How many now Manipulate, compose and decompose Sharing and grouping Visualise, build and map Make connections Core Knowledge 1. Pupils will know how to count, subitise, compose, sort, match, compare and order to 10

2. Pupils will know daily routines at home and at school 3. Pupils will know some time language (yesterday, tomorrow, today, tonight) 4. Pupils will begin to know the days of the week 5. Pupils will know how to match and sort objects 6. Pupils will know how to compare small amounts 7. Pupils will start to know how to compare size, mass and capacity 8. Pupils will know how to explore pattern 9. Pupils will know how to represent and compare 1, 2, and 3 and then 4 and 5 10. Pupils will know the composition of 1, 2, and 3 11. Pupils will know what circles and triangles are 12. Pupils will know one more and one less to 5 13. Pupils will know some time related vocab (now, before, later, soon, after, then, next) Hinterland Knowledge	3. Pupils will know the composition of 4 and 5 4. Pupils will know how to compare the mass and capacity of different objects 5. Pupils will know how to combine two groups 6. Pupils will know how to represent, count and compare 6, 7, 8 then 9 and 10 7. Pupils will know how to make pairs and doubles 8. Pupils will know how to count to 20 9. Pupils will know some number bonds to 10 10. Pupils will know the names and properties of some 3D shapes 11. Pupils will know how to explore patterns Hinterland Knowledge • Pupils will know which containers hold the lost water in the water tray • Pupils will complete a range of patterns in the outside area Skills • Pupils will develop being able to compare how heavy a range of objects are • Pupils will be able to name a range of 3D shapes around the learning environment	2. Pupils will know how to build numbers beyond 10 3. Pupils will know how to find counting patterns beyond 10 4. Pupils will know how to estimate 5. Pupils will know how to add more and take away 6. Pupils will know how to double 7. Pupils will know how to share and group 8. Pupils will know some odd and even numbers 9. Pupils will know how to use shapes to make pictures and patterns –matching and rotating. 10. Pupils will know how to compare mass, size and capacity 11. Pupils will know how to create patterns and to understand their relationships Hinterland Knowledge • Pupils will know how to make shape pictures by printing with different objects • Pupils will know how to share out objects evenly when playing games Skills

WCPS Mathematics Curriculum: EYFS – Year 6

• Pupils will know how to make digits 1 to 5 using a range of materials (eg playdough, paint)
• Pupils will know how to compare and sort a range of natural objects eg conkers
 	
Skills
• Pupils will develop being able to say the days of the week
• Pupils will be able to recognise and represent numbers 1-5
• Pupils will be able to identify circles, triangles and some shapes with 4 sides
• Pupils will be able to sort and match objects
 	
Wonder
• *I wonder which pumpkin is the heaviest?*
• *I wonder who has got the longest ribbon?*
• *I wonder if I can represent number 5 with my chalk?*
 	
Experiences & Provocations
• Pupils will experience the curriculum by:
  ○ carrying out a range of adult led activities and enhanced provision indoors and outside on a daily basis .
	• Pupils will be able to recognise and represent numbers 1-10
	
	Wonder
	• *I wonder which bucket will hold the most water?*
	• *I wonder how many ways I can make 10?*
	• *I wonder which shape has to most sides?*
	
	Experiences & Provocations
	• Pupils will experience the curriculum by:
	  ○ carrying out a range of adult led activities and enhanced provision indoors and outside on a daily basis. All these will use a variety of concrete and pictorial resources.
	
	Vocabulary - Tier 3 Subject Specific
	Compare, mass, capacity, represent, groups, pairs, doubles, number bonds, 3D shapes, patterns
		• Pupils will be able to spot odd and even numbers and patterns
		• Pupils will be able to double the number of objects that they are given
		• Pupils will be able to estimate how many children there are on the carpet
		
		Wonder
		• *I wonder how many pencils each child will get?*
		• *I wonder if my estimate is correct?*
		• *I wonder of there are more odd or even numbers here?*
		
		Experiences & Provocations
		• Pupils will experience the curriculum by:
		  ○ carrying out a range of adult led activities and enhanced provision indoors and outside on a daily basis. All these will use a variety of concrete and pictorial resources.
		
		Vocabulary - Tier 3 Subject Specific
		Subitise, order, estimate, double, share, group, odd, even, match, rotate, add, take away, relationships

All these will use a variety of concrete and pictorial resources. Vocabulary - Tier 3 Subject Specific in front, behind, next to, yesterday, tomorrow, today, tonight, more, less, longer, shorter, fewer, bigger, taller, circle, triangle		

KS1 Year One National Curriculum
Number – number and place value Pupils should be taught to: ▪ count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number ▪ count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens ▪ given a number, identify one more and one less ▪ identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least ▪ read and write numbers from 1 to 20 in numerals and words. Number – addition and subtraction Pupils should be taught to: ▪ read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs ▪ represent and use number bonds and related subtraction facts within 20 ▪ add and subtract one-digit and two-digit numbers to 20, including zero ▪ solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = □ – 9.

Number – multiplication and division

Pupils should be taught to:

- solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.

Number – fractions

Pupils should be taught to:

- recognise, find and name a half as one of two equal parts of an object, shape or quantity
- recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.

Measurement

Pupils should be taught to:

- compare, describe and solve practical problems for:
  - lengths and heights [for example, long/short, longer/shorter, tall/short, double/half]
  - mass/weight [for example, heavy/light, heavier than, lighter than]
  - capacity and volume [for example, full/empty, more than, less than, half, half full, quarter]
  - time [for example, quicker, slower, earlier, later]
- measure and begin to record the following:
  - lengths and heights
  - mass/weight
  - capacity and volume
  - time (hours, minutes, seconds)
- recognise and know the value of different denominations of coins and notes
- sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]
- recognise and use language relating to dates, including days of the week, weeks, months and years
- tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.

Geometry – properties of shapes

Pupils should be taught to:

- recognise and name common 2-D and 3-D shapes, including:
  - 2-D shapes [for example, rectangles (including squares), circles and triangles]
  - 3-D shapes [for example, cuboids (including cubes), pyramids and spheres].

Geometry – position and direction

Pupils should be taught to:

- describe position, direction and movement, including whole, half, quarter and three-quarter turns.

Year 1 Mathematics Curriculum

Autumn Term	Spring Term	Summer Term
<u>Place Value within 10</u> Core Knowledge 1. Pupils will know how to sort objects into different groups (size, shape, colour). 2. Pupils will know how to count fluently forwards to 10. 3. Pupils will know what one-to-one counting looks like and will be able to demonstrate this. 4. Pupils will know how to represent a number using real life manipulatives. 5. Pupils will know how to represent a number in more than one way, including using a numeral.	<u>Place Value within 20</u> Core Knowledge 1. Pupils will know how to count forwards to 20. 2. Pupils will know how to count backwards from 20. 3. Pupils will know how to count on from any number within 20. 4. Pupils will know that 1 ten and ten ones are equivalent. 5. Pupils will know that 10 can be represented in many ways but still carries the same value.	<u>Multiplication and Division</u> Core Knowledge 1. Pupils will know how to count in 2's, noting patterns that emerge. 2. Pupils will know how to count in 5's, noting patterns that emerge. 3. Pupils will know how to count in 10's, noting patterns that emerge. 4. Pupils will know how recognise and count equal groups of 2's, 5's and 10's. 5. Pupils will know what counting in a group sounds like.

6. Pupils will know that each numeral can be represented in written word and will begin to recognise these. 7. Pupils will know counting doesn't always have to start at 0 or 1 and will begin counting on from a given number within 10. 8. Pupils will know how to find one more than a given number. 9. Pupils will know how to count backwards within 10. 10. Pupils will know how to find one less than a given number. 11. Pupils will know how to compare groups by matching. 12. Pupils will know how to use vocabulary fewer, more, same. 13. Pupils will know how to use vocabulary less than, greater than and equal to. 14. Pupils will know the symbol that represents greater than and less than. 15. Pupils will know the value of numbers and compare them based on this. 16. Pupils will know how to order objects based on their value from smallest to largest and largest to smallest. 17. Pupils will know what a number line is and how it compares to a number track.	6. Pupils will know tens and ones value of 11, 12 and 13 and will recognise the numerals and words of these. 7. Pupils will know tens and ones value of 14, 15 and 16 and will recognise the numerals and words of these. 8. Pupils will know tens and ones value of 17, 18 and 19 and will recognise the numerals and words of these. 9. Pupils will know two tens are equivalent to twenty, that is the same as having 20 ones. 10. Pupils will know how to represent numbers from 11-20 in numeral from or with manipulatives. 11. Pupils will know how to identify one more or less than a given number within 20 using manipulatives. 12. Pupils will know how to count forwards and backwards on a number line. 13. Pupils will know how to problem solve on a number line. 14. Pupils will know the mathematical term estimate means. 15. Pupils will know why we compare numbers using less than, greater than and equal to. 16. Pupils will know how to compare numbers to 20.	6. Pupils will know how to add equal groups, including adding these as oral number sentences (2+2+2+2=8) 7. Pupils will know what a row is. 8. Pupils will know what a column is. 9. Pupils will know how to build an array of equal groups. 10. Pupils will know that double is two groups of a number or an amount. 11. Pupils will know how to double using maths manipulatives (up to 20). 12. Pupils will know why some numbers do not group equally. 13. Pupils will know how to share objects equally into groups (of 2 or more). Hinterland Knowledge • Pupils will know the real-life context of doubling and sharing. • Pupils will know how to write number sentences with more than one addition symbol. Skills • Pupils will develop being able to recognise • Pupils will develop being able to share • Pupils will develop being able to identify • Pupils will develop being able to count

18. Pupils will know how to use a number line to help counting forwards and backwards. Hinterland Knowledge • Pupils will know why we use pictorial representations to help us in maths. • Pupils will know why it is important to give reasons for how we know answers in maths. Skills • Pupils will develop being able to count forwards within 10. • Pupils will develop being able to count backwards within 10. • Pupils will develop their one-to-one correspondence when counting. • Pupils will develop their number recognition. • Pupils will develop being able to explain. • Pupils will develop being able to reason. • Pupils will develop being able to compare. • Pupils will develop being able to identify. • Pupils will develop being able to represent. Wonder • *I wonder how they decided on the names for numbers…*	17. Pupils will know how to order numbers to 20 in numeral form or using maths manipulatives. Hinterland Knowledge • Pupils will know why the teen numbers don't sound the same as the numbers below ten. • Pupils will know how to compare patterns in number 1-10 and 11-20. Skills • Pupils will develop being able to count forwards within 20. • Pupils will develop being able to count backwards within 20. • Pupils will develop their one-to-one correspondence when counting. • Pupils will develop their number recognition. • Pupils will develop being able to explain. • Pupils will develop being able to reason. • Pupils will develop being able to compare. • Pupils will develop being able to identify. • Pupils will develop being able to represent. • Pupils will develop being able to estimate. Wonder	• Pupils will develop being able to explain • Pupils will develop being able to reason Wonder • *I wonder if I can find groups of 10 x 10 to make 100…* • *I wonder who the first person was to count in 5's…* Vocabulary - Tier 3 Subject Specific Count, times table, divide, equal, add, array, double, share, group, forwards, backwards, column, row, even, odd <u>Fractions</u> Core Knowledge 1. Pupils will know that half means 'one of two equal parts.' 2. Pupils will know why a half is equal and not two random parts of the shape or object. 3. Pupils will know how to find a half of a shape or an object. 4. Pupils will know how to find half of an amount.

• *I wonder how many ways there are to represent the number 5…* • *I wonder when I should stop counting… 1 or zero?* Vocabulary - Tier 3 Subject Specific Number, count, more, less, fewer, greater, smaller, same, equal, compare, number line, number track, amount, represent, order, group <u>Addition and Subtraction within 10</u> Core Knowledge 1. Pupils will know a number can be broken into 2 parts. 2. Pupils will know the parts of a number make the whole number. 3. Pupils will know the part of a number sometimes looks like a group e.g. colour, shape, size. 4. Pupils will know the parts of a number cannot be bigger than the whole. 5. Pupils will know what a part-whole model is. 6. Pupils will know how we can represent numbers in a part whole model (pictorial and numeral). 7. Pupils will know what the + symbol means.	• *I wonder what the world record speed is for counting to twenty…* • *I wonder what how many ways I can make the number __…* Vocabulary - Tier 3 Subject Specific Number, count, more, less, fewer, greater, smaller, same, equal, compare, number line, number track, amount, represent, order, group, teen, part, whole, tens, one <u>Addition and Subtraction within 20</u> Core Knowledge 1. Pupils will know how to add by counting on from one number. 2. Pupils will know how to complete a first, then, now number story. 3. Pupils will know the similarities of number bonds to 20 in comparison of those to 10. 4. Pupils will know how to represent bonds to 20. 5. Pupils will know how to systematically find number bonds to 20. 6. Pupils will know how to add on a number line.	5. Pupils will know that a quarter means 'one of four equal parts.' 6. Pupils will know how to share amounts into four equal groups. Hinterland Knowledge • Pupils will know why it is important to know about halves and quarters (baking) Skills • Pupils will develop being able to recognise • Pupils will develop being able to share • Pupils will develop being able to identify • Pupils will develop being able to count • Pupils will develop being able to explain • Pupils will develop being able to reason Wonder • *I wonder if I quartered a cake how many people, I would share it with…* • *I wonder how I know I would definitely have half of something…* Vocabulary - Tier 3 Subject Specific Half, whole, equal, total, share, quarter, two, four <u>Position and Direction</u>

8. Pupils will know what the = symbol means. 9. Pupils will know that the addition symbol can be used to combine two parts. 10. Pupils will know the equals symbol shows the sum of the two parts together (the total). 11. Pupils will know how to write a number sentence based on a concrete model or part whole model. 12. Pupils will know how to correct mistakes by reasoning with manipulates and oral number sentences. 13. Pupils will know how to read a number sentence with an addition and equals symbol. 14. Pupils will know what a fact family is and how the number sentences compare. 15. Pupils will know what a number bond is. 16. Pupils will know how to find number bonds of a given number within 10. 17. Pupils will know how to find number bonds systematically. 18. Pupils will know how to represent addition facts in multiple ways. 19. Pupils will know what a bar model is. 20. Pupils will know that + 0 is a important number bond fact. 21. Pupils will know some of the number bonds to 10.	7. Pupils will know how to add by crossing ten, first making then and then adding the 'bit'. 8. Pupils will know how to subtract (not crossing ten) using maths manipulatives. 9. Pupils will know how to write number sentences to show subtraction within 20. 10. Pupils will know how to subtract crossing 10 using pictorial representations and some number sentences. 11. Pupils will know how facts are related (addition and subtraction). 12. Pupils will know how to compare number sentences using appropriate mathematical language. 13. Pupils will know the/what/how/why… Hinterland Knowledge • Pupils will know that there are patterns in number within both addition and subtraction. • Pupils will know that maths manipulatives represent the same value as numbers and numerals discussed orally. Skills • Pupils will develop being able to add. • Pupils will develop being able to subtract. • Pupils will develop being able to reason.	Core Knowledge 1. Pupils will know what a quarter turn looks like. 2. Pupils will know what a half turn looks like. 3. Pupils will know what a three-quarter turn looks like. 4. Pupils will know what a full turn looks like. 5. Pupils will know which way is left and right. 6. Pupils will know how to describe turns left and right. 7. Pupils will know how to use positional language to describe (top, between, below). Hinterland Knowledge • Pupils will know the real life context of positional language and the value of using these words. Skills • Pupils will develop being able to describe • Pupils will develop being able to explain • Pupils will develop being able to investigate Wonder • *I wonder what happens if I turn four quarters…* • *I wonder if I can give somebody instructions with positional language to move carefully…*

22. Pupils will know how to find number bonds to make 10 using manipulatives. 23. Pupils will know how to add together two numbers to make a whole. 24. Pupils will know how to add more using a number line. 25. Pupils will know how to answer missing number problems. 26. Pupils will know – represents subtraction. 27. Pupils will know that part-whole models can be used for subtraction problems. 28. Pupils will know within a fact family there are eight facts. 29. Pupils will know how to subtract (take away) by crossing out to show how many are left. 30. Pupils will know subtract on a number line. 31. Pupils will know how to read addition and subtraction problems contemporaneously. Hinterland Knowledge • Pupils will know how begin to answer worded problems. • Pupils will know that there can be a number can be broken down into more than one part. • Pupils will recognise other terms used for addition and subtraction.	• Pupils will develop being able to represent. • Pupils will develop being able to problem solve. • Pupils will develop being able to interpret. • Pupils will develop being able to read number sentences. • Pupils will develop being able to use maths manipulatives. Wonder • *I wonder if there are any patterns in bonds to 20…* • *I wonder if I could make a number sentence out of natural objects…* Vocabulary - Tier 3 Subject Specific Add, subtract, more, less, takeaway, bigger, smaller, plus, tens frame, part-whole model, number line, counting, symbol, represent, number sentence, number bond, zero, cross, relate, partition, inverse, commutative, pattern <u>Place Value within 50</u> Core Knowledge	Vocabulary - Tier 3 Subject Specific Full, half, quarter, three- quarter, turn, left, right, forwards, backwards, position, direction, top, between, below <u>Place Value within 100</u> Core Knowledge 1. Pupils will know what a 100 square is. 2. Pupils will know how to use groups of 10 to help counting to 100. 3. Pupils will know how to use strategies to help counting to 100. 4. Pupils will know how to group tens and ones in a larger number. 5. Pupils will know how to record tens and ones in a larger number. 6. Pupils will know what partitioning means. 7. Pupils will know how to compare numbers based on the value of their tens and ones. 8. Pupils will know how to compare numbers to 100 using greater than, less than and equal to. 9. Pupils will know how to order numbers to 100 based on their tens and ones place value.

Skills
- Pupils will develop being able to form numbers.
- Pupils will develop being able to add.
- Pupils will develop being able to subtract.
- Pupils will develop being able to reason.
- Pupils will develop being able to represent.
- Pupils will develop being able to problem solve.
- Pupils will develop being able to interpret.

Wonder
- *I wonder how many number bonds there are for this number…*
- *I wonder if every time I add zero the number stays the same…*

Vocabulary - Tier 3 Subject Specific
Add, subtract, more, less, takeaway, bigger, smaller, plus, tens frame, part-whole model, number line, counting, symbol, represent, number sentence, number bond, zero

<u>Shape</u>

Core Knowledge
1. Pupils will know what a 3D shape is.
1. Pupils will know how to count forwards and backwards within 50.
2. Pupils will know that a group of 10 ones can be called one ten.
3. Pupils will know how to count in 10's.
4. Pupils will know we can add tens and ones to form a larger number.
5. Pupils will know how to represent numbers to 50 in multiple ways, including recognising the written number.
6. Pupils will know how to partition a number into tens and ones (e.g. twenty six = twenty /six).
7. Pupils will know how to use number tracks and number squares to find one more and one less.
8. Pupils will know how to use greater than, less than and equal to symbols to compare numbers to 50.
9. Pupils will know how to order numbers from smallest to largest and largest to smallest.
10. Pupils will know how to count in 2's.
11. Pupils will know how to count in 5's.
12. Pupils will know patterns with the 2- and 5-times table.

Hinterland Knowledge
10. Pupils will know how to find one more and one less than numbers to 100 using maths manipulatives.

Hinterland Knowledge
- Pupils will know how to answer questions with cardinal number values.
- Pupils will know how to record their data on a graph.

Skills
- Pupils will develop being able to count.
- Pupils will develop being able to reason.
- Pupils will develop being able to represent.
- Pupils will develop being able to problem solve.
- Pupils will develop being able to interpret.
- Pupils will develop fluency skills.
- Pupils will develop being able to use maths manipulatives.
- Pupils will develop being able to notice.

Wonder
- *I wonder why the number 100 is a very important number…*
- *I wonder what how many number patterns there are on a 100 square…*

2. Pupils will know the names on many common 3D shapes (cubes, cuboids, cylinders, pyramids, cones and spheres).
3. Pupils will know the ways 3D shapes can look similar and different to each other.
4. Pupils will know what a face, edge and vertices (corner) is.
5. Pupils will know how identify properties of shapes.
6. Pupils will know how to compare 3D shapes based on their properties.
7. Pupils will know what a 2D shape is.
8. Pupils will know the names of common 2D shapes (triangles, squares, rectangles, circles).
9. Pupils will know that 2D shapes can be sorted based on their properties.
10. Pupils will know what a repeating pattern is.
11. Pupils will know how to continue a repeating pattern.

Hinterland Knowledge

- Pupils will know that everything is made from shapes.
- Pupils will know that shapes can be grouped together based on their properties, colour and size.

Skills

- Pupils will know why it is important to give our reasoning when giving our answers in maths.
- Pupils will know why it is important to work systematically when counting in 2's, 5's and 10's.

Skills

- Pupils will develop being able to count.
- Pupils will develop being able to reason.
- Pupils will develop being able to represent.
- Pupils will develop being able to problem solve.
- Pupils will develop being able to interpret.
- Pupils will develop fluency skills.
- Pupils will develop being able to use maths manipulatives.
- Pupils will develop being able to notice.

Wonder

- *I wonder why we have to know how to count in 10's…*
- *I wonder how many matching pairs I have in my home…*

Vocabulary - Tier 3 Subject Specific
Number, count, more, less, fewer, greater, smaller, same, equal, compare, number line,

Vocabulary - Tier 3 Subject Specific
Number, count, more, less, fewer, greater, smaller, same, equal, compare, number line, number track, amount, represent, order, group, place value, twos, fives, tens, ones, group, more, less, symbols, hundreds

<u>Money</u>

Core Knowledge

1. Pupils will know what money is used for.
2. Pupils will know coins by recognising their colour and shape.
3. Pupils will know the value of different denominations of coins (10p = 10 1p's)
4. Pupils will know notes by recognising their colour size.
5. Pupils will know the place value of notes (e.g. £5 note = 5 £1 coins)
6. Pupils will know how to count in 1ps, 2ps, 5ps and 10ps.
7. Pupils will know how to compare amounts of coins based on their value.

Hinterland Knowledge

- Pupils will know different ways to make a total amount

- Pupils will develop being able to recognise.
- Pupils will develop being able to sequence.
- Pupils will develop being able to order.
- Pupils will develop being able to reason.
- Pupils will develop being able to categorise.

Wonder

- *I wonder how many shapes are in my kitchen…*
- *I wonder how tall I can build a tower from 3D shapes…*

Vocabulary - Tier 3 Subject Specific

Shapes, 3D, 2D, dimensional, triangles, squares, rectangles, circles, cubes, cuboids, cylinders, pyramids, cones and spheres, corner, vertices, side, edge, face

Experiences & Provocations

- Pupils will experience the curriculum by:
  - Engaging in a range of practical maths experience to understand foundational concepts.
  - Using physical maths manipulates to represent and count numbers.

number track, amount, represent, order, group, place value, twos, fives, tens, ones, group, more, less, symbols

<u>Length and Height</u>

Core Knowledge

1. Pupils will know height is a type of length.
2. Pupils will know how to use language (longer, shorter, taller, equal) to describe length and height.
3. Pupils will know how they can compare length and height and that objects need to have the same starting point.
4. Pupils will know how to use non-standard units to measure length and height (cubes, hands, straws).
5. Pupils will know what a ruler is.
6. Pupils will know how to use a ruler and why it is important to start at 0cm.

Hinterland Knowledge

- Pupils will know how to accurately measure things in cm.
- Pupils will know how to compare things of different height and length (eg. 4 cubes compared to 4 pencils long).

- Pupils will know that a larger coin doesn't mean it has a larger value.
- Pupils will know how to order money values.

Skills

- Pupils will develop being able to order.
- Pupils will develop being able to count.
- Pupils will develop being able to recognise.
- Pupils will develop being able to organise.
- Pupils will develop being able to recall.
- Pupils will develop being able to compare.

Wonder

- *I wonder what I could buy will 100p…*
- *I wonder what I could buy with £5…*
- *I wonder who has the most money in the world…*

Vocabulary - Tier 3 Subject Specific

Money, pound, pence, penny, coin, note, value, metal, shape, size, amount, total, more, less

<u>Time</u>

Core Knowledge

1. Pupils will know how to order events.
2. Pupils will know there are 7 days in a week.
3. Pupils will know how to talk about events using daily vocabulary.

	Skills • Pupils will develop being able to measure. • Pupils will develop being able to identify. • Pupils will develop being able to compare. • Pupils will develop being able to add. Wonder • *I wonder how long the longest ruler ever is…* • *I wonder if I could compare the height of everyone in my family…* Vocabulary - Tier 3 Subject Specific Long, longer, short, shorter, tall, taller, measure, accurate, count, careful, equal, length, height <u>Mass and Volume</u> Core Knowledge 1. Pupils will know what heavy and light mean. 2. Pupils will know how to describe objects after holding them in their hands. 3. Pupils will know how to check the weight of two objects using balance scales. 4. Pupils will know that larger objects are not always heavier. 5. Pupils will know that they can use non-standard units (cubes, bricks) to balance another object.	4. Pupils will know there are 12 months in a year and will identify significant dates (e.g. their birthday). 5. Pupils will know the hour hand is short and the minute hand is long on a clock. 6. Pupils will know when the minute hand is pointing to the 12 it is an o'clock time. 7. Pupils will know how to tell the time to the hour. 8. Pupils will know when the minute hand is pointing to the 6 it is a half past time. 9. Pupils will know how to tell the time to the half hour. 10. Pupils will know what the difference in time is between seconds, minutes and hours. 11. Pupils will know how to compare amounts of time using the language faster, slower, earlier and later. Hinterland Knowledge • Pupils will know that when someone wins a race the length of time will be shorter and if someone takes longer the length of time will be larger. • Pupils will know how to record time in minutes and seconds. Skills

	6. Pupils will know how to compare the mass of objects using <, > and =. 7. Pupils will know how to compare the volume in a container by using capacity and volume vocabulary. 8. Pupils will know how to measure the capacity of different containers using non-standard units of measure. 9. Pupils will know how to compare the capacity of different containers using non-standard units of measure 10. Pupils will know when to use terms 'more', 'less' and 'equal to' to compare as well as the symbols <, > and =. Hinterland Knowledge • Pupils will know why we might need to know the weight of objects (baking…). • Pupils will know why we might need to know the capacity of objects (baking…). Skills • Pupils will develop being able to compare • Pupils will develop being able to explain • Pupils will develop being able to justify • Pupils will develop being able to measure • Pupils will develop being able to reason • Pupils will develop being able to experiment	• Pupils will develop being able to order • Pupils will develop being able to describe. • Pupils will develop being able to sequence. • Pupils will develop being able to judge. • Pupils will develop being able to reason. • Pupils will develop being able to record. Wonder • *I wonder how quick the fastest 100m sprint ever run was…* • *I wonder how long I normally take to get ready for school…* • *I wonder how long it would take to drive around Norwich City…* Vocabulary - Tier 3 Subject Specific Before, after, morning, afternoon, evening, first, then, next, last, later, finally, o'clock, hour, minute, day, week, month, year, second

	Wonder
	• *I wonder how we can measure how much liquid will fill my container…*
	• *I wonder how much mass the largest set of scales can hold…*
	
	Vocabulary - Tier 3 Subject Specific
	Mass, weight, volume, heavy, light, heavier than, lighter than, check, prove, scale, balance, weigh, equal, capacity, full, nearly full, empty, nearly empty, less, more, measure, container
	
	Experiences & Provocations
	• Pupils will experience the curriculum by:
	  ○ Engaging in a range of practical maths experience to understand foundational concepts.
	  ○ Using physical maths manipulates to represent and count numbers.	

KS1 National Curriculum
Number – number and place value Pupils should be taught to: ▪ count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward

- recognise the place value of each digit in a two-digit number (tens, ones)
- identify, represent and estimate numbers using different representations, including the number line
- compare and order numbers from 0 up to 100; use <, > and = signs
- read and write numbers to at least 100 in numerals and in words
- use place value and number facts to solve problems.

Number – addition and subtraction

Pupils should be taught to:

- 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
- recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100
- add and subtract numbers using concrete objects, pictorial representations, and mentally, including:
  - a two-digit number and ones
  - a two-digit number and tens
  - two two-digit numbers
  - adding three one-digit numbers
- show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot
- recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.

Number – multiplication and division

Pupils should be taught to:

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

Number – fractions

Pupils should be taught to:

1. recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity
2. write simple fractions for example, $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$.

Measurement

Pupils should be taught to:

- choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels
- compare and order lengths, mass, volume/capacity and record the results using >, < and =
- recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value
- find different combinations of coins that equal the same amounts of money
- solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change
- compare and sequence intervals of time
- tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times
- know the number of minutes in an hour and the number of hours in a day.

Geometry – properties of shapes

Pupils should be taught to:

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

Geometry – position and direction

Pupils should be taught to:

- order and arrange combinations of mathematical objects in patterns and sequences
- use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise).

Statistics

Pupils should be taught to:

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

Year 2 Mathematics Curriculum		
Autumn Term	Spring Term	Summer Term
<u>Place value</u> Core Knowledge 1. Pupils will know the numbers from 0 to 20. 2. Pupils will know the multiples of 10. 3. Pupils will know two-digit numbers are made up of 10s and 1s. 4. Pupils will know numbers can be split into parts. 5. Pupils will know numbers can be represented by numerals and words. 6. Pupils will know number lines have interval lines which are equal. 7. Pupils will know number lines do not always start at 0.	<u>Money</u> Core Knowledge 1. Pupils will know the coins 1p, 2p, 5p, 10p, 20p, 50p, £1 and £2. 2. Pupils will know the notes £5, £10, £20 and £50. 3. Pupils will know a mixture of coins and notes can be used to pay for items. 4. Pupils will know different coins/notes can be used to make the same amount. 5. Pupils will know why change is given. Hinterland Knowledge	<u>Fractions</u> Core Knowledge 1. Pupils will know fractions are always split into equal parts. 2. Pupils will know a half is when something is split into two equal parts. 3. Pupils will know a quarter is when something is split into four equal parts. 4. Pupils will know two quarters are equivalent to one half. 5. Pupils will know a third is split into three equal parts. 6. Pupils will know the top number is the numerator.

8. Pupils will know numbers can be compared using smaller than, greater than, and equal to. 9. Pupils will know what smaller and greater means. 10. Pupils will know objects can be grouped together for counting. Hinterland Knowledge • Pupils will know real-life uses of number lines. • Pupils will know numbers are also represented as Roman numerals. Skills • Pupils will develop being able to count in 10s to 100. • Pupils will develop being able to recognise 10s and 1s in a number. • Pupils will develop being able to break a whole number down into two parts. • Pupils will develop being able to write numbers in words. • Pupils will develop being able to write numbers in expanded form. • Pupils will develop being able to count in 10s on a number line.	• Pupils will know other forms of payment including cards. • Pupils will know some of the coins previously used in the past. Skills • Pupils will develop being able to recognise coins and notes. • Pupils will develop being able to count pence. • Pupils will develop being able to count pounds in notes and coins. • Pupils will develop being able to select a given amount of money. • Pupils will develop being able to make the same amount of money with different coins. • Pupils will develop being able to compare money. • Pupils will develop being able to give change. Wonder • *I wonder how coins are made?* • *I wonder what currency other countries use?* Experiences & Provocations • Pupils will experience the curriculum by: ○ Handling coins and notes to help with their number problems.	7. Pupils will know the bottom number is the denominator. 8. Pupils will know unit fraction have the numerator of 1. 9. Pupils will know non-unit fractions do not have the numerator of 1. Hinterland Knowledge • Pupils will know fractions that have the same numerator and denominator are equivalent to 1 whole. • Pupils will know a fraction with the numerator of 0 is the same as 0. Skills • Pupils will develop being able to make equal parts. • Pupils will develop being able to recognise a half. • Pupils will develop being able to find a half. • Pupils will develop being able to recognise a quarter. • Pupils will develop being able to find a quarter. • Pupils will develop being able to recognise a third. • Pupils will develop being able to find a third.

- Pupils will develop being able to count in 1s on a number line.
- Pupils will develop being able to estimate numbers on a number line.
- Pupils will develop being able to compare numbers.
- Pupils will develop being able to order numbers.
- Pupils will develop being able to count in 2s, 5s, 10s, and 3s.

Wonder

- *I wonder who created times tables?*
- *I wonder when number lines started being used?*

Experiences & Provocations

- Pupils will experience the curriculum by:
  - Using math manipulatives to calculate and aid mathematical problems.

Vocabulary - Tier 3 Subject Specific
Tens Ones Place value Partition Part Whole Expand Number line Interval Compare Smaller Greater Equal 2s 5s 10s 3s

<u>Addition and subtraction</u>

  - Being given a budget and deciding what to spend it on.

Vocabulary - Tier 3 Subject Specific
Coins Notes Money Change Pence Pound

<u>Multiplication and division</u>

Core Knowledge

1. Pupils will know what the multiplication and division symbols look like.
2. Pupils will know multiplication is adding groups of the same amount.
3. Pupils will know the 2 times table.
4. Pupils will know the 5 times table.
5. Pupils will know the 10 times table.
6. Pupils will know dividing is sharing groups of the same amount.
7. Pupils will know odd and even numbers.

Hinterland Knowledge

- Pupils will know the other names used for multiplication and division e.g., times, share.
- Pupils will know some numbers are prime.

Skills

- Pupils will develop being able to use unit fractions.
- Pupils will develop being able to use non-unit fractions.
- Pupils will develop being able to find three quarters.
- Pupils will develop being able to count in fractions.

Wonder

- *I wonder where I would see fractions being used in my surroundings?*

Experiences & Provocations

- Pupils will experience the curriculum by:
  - Using math manipulatives to calculate and aid mathematical problems.

Vocabulary - Tier 3 Subject Specific
Fractions Numerator Denominator Half Quarter Third Whole Unit Non-unit

<u>Time</u>

Core Knowledge

1. Pupils will know there are 24 hours in the day.

Core Knowledge 1. Pupils will know number bonds to 10 are two numbers that add to make 10. 2. Pupils will know adding is when two numbers make a greater number. 3. Pupils will know subtracting is when a number is taken away from another number to create a smaller number. 4. Pupils will know number bonds to 100 are two numbers that add to make 100. 5. Pupils will know how number bonds to 10 can help solve number bonds to 100. 6. Pupils will know partitioning can help when adding across 10. 7. Pupils will know partitioning can help when subtracting across 10. 8. Pupils will know the place value of 1s and 10s. Hinterland Knowledge • Pupils will know other terms used for addition and subtraction. • Pupils will know the place value of 100s. Skills	• Pupils will develop being able to recognise equal groups. • Pupils will develop being able to make equal groups. • Pupils will develop being able to add equal groups. • Pupils will develop being able to complete multiplication sentences using the 'x' symbol. • Pupils will develop being able to complete multiplication sentences from pictures. • Pupils will develop being able to use arrays. • Pupils will develop being able to recall their 2s, 5s, and 10s timetables. • Pupils will develop being able to share equal groups. • Pupils will develop being able to make equal groups. • Pupils will develop being able to divide by 2s, 5s, and 10s Wonder • *I wonder who why it is called multiplication and division?* • *I wonder if times tables can go on forever?* Experiences & Provocations	2. Pupils will know there are 60 minutes in 1 hour. 3. Pupils will know there are 30 minutes in a half hour. 4. Pupils will know there are 60 seconds in a minute. 5. Pupils will know clocks have a minute hand, hour hand, and sometimes a second hand. 6. Pupils will know the hour hand is short. 7. Pupils will know the minute hand is long. 8. Pupils will know o'clock is when the minute hand is at 12. 9. Pupils will know quarter past is when the minute hand is at 3. 10. Pupils will know half past is when the minute hand is at 6. 11. Pupils will know quarter too is when the minute hand is at 9. 12. Pupils will know clock hands turn clockwise. Hinterland Knowledge • Pupils will know some clocks use Roman numerals, but the symbols represent the numbers 1 to 12.

- Pupils will develop being able to recall number bonds to 10.
- Pupils will develop being able to create and solve fact families.
- Pupils will develop being able to use related facts.
- Pupils will develop being able to recall number bonds to 100.
- Pupils will develop being able to add 1s.
- Pupils will develop being able to subtract 1s.
- Pupils will develop being able to add by making 10.
- Pupils will develop being able to add three 1-digit numbers.
- Pupils will develop being able to add to the next 10.
- Pupils will develop being able to add across a 10.
- Pupils will develop being able to subtract across 10.
- Pupils will develop being able to subtract from a 10.
- Pupils will develop being able to subtract a 1-digit number from a 2-digit number.
- Pupils will develop being able to identify 10 more and 10 less.
- Pupils will develop being able to add two 2-digit numbers.

- Pupils will experience the curriculum by:
  - Using math manipulatives to calculate and aid mathematical problems.

Vocabulary - Tier 3 Subject Specific
Multiplication Division Double Share Add Odd Even Array

<u>Length and height</u>

Core Knowledge

1. Pupils will know rulers can be used to measure length.
2. Pupils will know there are rulers which measure in units.
3. Pupils will know cm is a smaller measurement than m.
4. Pupils will know there are 100cm in a m.
5. Pupils will know the unit of measure used depends on what you are measuring.

Hinterland Knowledge

- Pupils will know other types of length measures for longer distances e.g. miles, km.
- Pupils will know there are smaller length measurements including mm.

- Pupils will know some digital clocks are 24 hours, so the hours will go from 1 to 24.

Skills

- Pupils will develop being able to tell the time to the hour.
- Pupils will develop being able to tell the time to the half-hour.
- Pupils will develop being able to recognise o/clock and half past.
- Pupils will develop being able to recognise quarter past and quarter to.
- Pupils will develop being able to tell the time to 5 minutes.
- Pupils will develop being able to find durations of time.

Wonder

- *I wonder when clocks stopped using Roman numerals for time?*
- *I wonder why clocks all used to have Roman numerals?*

Experiences & Provocations

- Pupils will experience the curriculum by:

- Pupils will develop being able to subtract two 2-digit numbers.
- Pupils will develop being able to compare number sentences.

Wonder

- *I wonder who the first person to add two numbers was?*
- *I wonder what made someone decide to add and subtract numbers?*

Experiences & Provocations

- Pupils will experience the curriculum by:
  - Using math manipulatives to calculate and aid mathematical problems.

Vocabulary - Tier 3 Subject Specific
Bond Fact family Addition Subtraction Digit More Less Compare

<u>Shape</u>

Core Knowledge

1. Pupils will know the names of different 2D and 3D shapes.
2. Pupils will know 2D stands for two dimensional.

Skills

- Pupils will develop being able to measure length in cm.
- Pupils will develop being able to measure length in m.
- Pupils will develop being able to compare lengths.
- Pupils will develop being able to order lengths.
- Pupils will develop being able to complete the four operations using length.

Wonder

- *I wonder what the smallest unit of measurement is?*
- *I wonder who the tallest person in my class is?*

Experiences & Provocations

- Pupils will experience the curriculum by:
  - Using math manipulatives to calculate and aid mathematical problems.
  - Measure each other and order the classes heights.

Vocabulary - Tier 3 Subject Specific
Centimeter Meter Ruler Measure Length Height Order

  - Using math manipulatives to calculate and aid mathematical problems, including fractions and clocks.

Vocabulary - Tier 3 Subject Specific
Clock Hand Minute Hour Second Past To Day O'clock Quarter Half Time Clockwise

<u>Statistics</u>

Core Knowledge

1. Pupils will know one line in a tally represents 1 amount.
2. Pupils will know when a tally reaches 5 the line goes across the previous 4 lines.
3. Pupils will know in pictograms the amounts are represented by pictures.
4. Pupils will know a key informs someone of what value the picture represents.
5. Pupils will know tally charts and pictograms have headers above the columns.
6. Pupils will know one block represents one amount in block diagrams.

Hinterland Knowledge

- Pupils will know there are other types of charts and diagrams to represent data.
- Pupils will know statistical representations are used by lots of companies.

3. Pupils will know 3D stands for three dimensional.
4. Pupils will know 2D shapes have sides.
5. Pupils will know 2D shapes have vertices.
6. Pupils will know a vertices is when two sides meet.
7. Pupils will know a line of symmetry is when either side of the line is identical.
8. Pupils will know 3D shapes have faces.
9. Pupils will know 3D shapes have edges.
10. Pupils will know an edge is the line between two faces.
11. Pupils will know 3D shapes have vertices.
12. Pupils will know vertices are where two edges meet.

Hinterland Knowledge

- Pupils will know 2D and 3D shapes are used in buildings and architecture.
- Pupils will know some 3D shapes have 2D shapes within them.

Skills

- Pupils will develop being able to recognise 2D and 3D shapes.
- Pupils will develop being able to count the sides on 2D shapes.

Mass, capacity and temperature

Core Knowledge

1. Pupils will know mass is a unit to measure how heavy something is without gravity.
2. Pupils will know grams and kilograms is a unit of measure for mass.
3. Pupils will know grams is a smaller unit than kilograms.
4. Pupils will know there is 100g in a kg.
5. Pupils will know capacity is the total amount of liquid something can hold.
6. Pupils will know the volume is the amount of liquid.
7. Pupils will know millilitres and litres are a measure of volume.
8. Pupils will know millilitres is a smaller unit than litres.
9. Pupils will know there is 1000ml in a litre.
10. Pupils will know temperature is measured using a thermometer.
11. Pupils will know temperature is measured using degrees Celsius.

Hinterland Knowledge

- Pupils will know temperature can also be measured using degrees Fahrenheit.

Skills

- Pupils will develop being able to create tally charts.
- Pupils will develop being able to draw pictograms (1-1).
- Pupils will develop being able to interpret pictograms (1-1).
- Pupils will develop being able to draw pictograms (2, 5, 10).
- Pupils will develop being able to interpret pictograms (2, 5, 10).
- Pupils will develop being able to draw block diagrams.
- Pupils will develop being able to interpret block diagrams.

Wonder

- *I wonder who created the first tally chart?*
- *I wonder what a tally chart of people's pets in my class would look like?*

Experiences & Provocations

- Pupils will experience the curriculum by:
  - Creating their own statistical representations from data in their class.

• Pupils will develop being able to count vertices on 2D shapes. • Pupils will develop being able to draw 2D shapes. • Pupils will develop being able to identify lines of symmetry. • Pupils will develop being able to use lines of symmetry to complete shapes. • Pupils will develop being able to sort 2D shapes. • Pupils will develop being able to count faces on 3D shapes. • Pupils will develop being able to count edges on 3D shapes. • Pupils will develop being able to count vertices on 3D shapes. • Pupils will develop being able to sort 3D shapes. • Pupils will develop being able to make patterns with 2D and 3D shapes. Wonder • *I wonder if any shapes are named after people?* • *I wonder how many different 2D and 3D shapes there are?* Experiences & Provocations • Pupils will experience the curriculum by:	• Pupils will know the mass of something is the same even in space and on other planets. Skills • Pupils will develop being able to measure mass in grams and kilograms. • Pupils will develop being able to compare mass. • Pupils will develop being able to measure capacity. • Pupils will develop being able to measure volume in millimeters and litres. • Pupils will develop being able to compare volumes. • Pupils will develop being able to use the four operations with mass. • Pupils will develop being able to use the four operations with volume. • Pupils will develop being able to read and measure the temperature. Wonder • *I wonder what the heaviest person's mass was?* • *I wonder what volume of water a swimming pool holds?* Experiences & Provocations	Vocabulary - Tier 3 Subject Specific Statistics Tally Pictogram Block Interpret Key <u>Position and direction</u> Core Knowledge 1. Pupils will know their left and right. 2. Pupils will know positions including up, down, forward, backward, left and right. 3. Pupils will know quarter, half, three quarter and full turns. 4. Pupils will know clockwise and anticlockwise. Hinterland Knowledge • Pupils will know these are the same instructions you would program into robots like the Bee Bots. Skills • Pupils will develop being able to describe position. • Pupils will develop being able to describe movement. • Pupils will develop being able to describe turns. • Pupils will develop being able to make patterns with shapes using turns and movements.

○ Handling 2D and 3D shapes within the classroom. ○ Identifying 2D and 3D shapes outside the classroom. Vocabulary - Tier 3 Subject Specific 2D 3D Shape Side Vertices Symmetry Faces Edges Dimensional	• Pupils will experience the curriculum by: ○ Using math manipulatives to calculate and aid mathematical problems. ○ Measuring different object's mass, liquid's volume, and liquid's temperature. Vocabulary - Tier 3 Subject Specific Weight Mass Grams Kilograms Capacity Volume Millilitres Litres Temperature Degrees Celsius	Wonder • *I wonder if my friend could follow my instructions?* • *I wonder what would happen if I gave the wrong instructions?* Experiences & Provocations • Pupils will experience the curriculum by: ○ Giving each other movement and turn instructions to move their partner from start to end points. Vocabulary - Tier 3 Subject Specific Position Movement Turn Left Right Forward Backward Up Down Clockwise Anticlockwise Quarter Half Three quarter Whole

KS2 National Curriculum
Number – number and place value Pupils should be taught to: ▪ 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.

Number – addition and subtraction

Pupils should be taught 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
- 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.

Number – multiplication and division

Pupils should be taught to:

- identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers
- know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers
- establish whether a number up to 100 is prime and recall prime numbers up to 19
- 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

Number – fractions

Pupils should be taught to:

- compare and order fractions whose denominators are all multiples of the same number
- identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths

3. 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
- multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams
4. read and write decimal numbers as fractions [for example, $0.71 = \frac{71}{100}$]
- recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents
- round decimals with two decimal places to the nearest whole number and to one decimal place
- read, write, order and compare numbers with up to three decimal places
- 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
5. 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.

Measurement

Pupils should be taught to:

- 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 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 (cm^2) and square metres (m^2) and estimate the area of irregular shapes
- estimate volume [for example, using 1 cm^3 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.

Geometry – properties of shapes

Pupils should be taught to:

- 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 (°)
- identify:
  - angles at a point and one whole turn (total 360°)
  1. angles at a point on a straight line and $\frac{1}{2}$ a turn (total 180°)
  - other multiples of 90°
- 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.

Geometry – position and direction

Pupils should be taught to:

- 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.

Statistics

Pupils should be taught to:

- solve comparison, sum and difference problems using information presented in a line graph
- complete, read and interpret information in tables, including timetables.

Year 3 Mathematics Curriculum		
Autumn Term	Spring Term	Summer Term
Place Value	Multiplication and Division B	Fractions B

Core Knowledge 1. Pupils will know how to identify, represent and estimate numbers using different representations. 2. Pupils will know how to recognise the place value of each digit in a three-digit number (hundreds, tens, ones) 3. Pupils will 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 4. Pupils will know how to read and write numbers up to 1000 in numerals and in words 5. Pupils will know how to compare and order numbers up to 1000 Hinterland knowledge • Pupils will know how to use multiples of 2, 3, 4, 5, 8, 10, 50 and 100. • Pupils will know how to use larger numbers to at least 1000, applying partitioning related to place value using varied and increasingly complex problems, building on work in year 2 (for example, 146 = 100 + 40 and 6, 146 = 130 + 16). • Pupils will know how to use a variety of representations, including those related to	Core Knowledge 1. Pupils will know how to recall and use multiplication facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers (Y2) 2. Pupils will know how to write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for 2-digit numbers times 1-digit numbers, using mental and progressing to formal written methods 3. Pupils will know how to 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 Hinterland knowledge • Pupils will know how to solve simple problems in contexts, deciding which of the four operations to use and why. These include measuring and scaling contexts, (for example, four times as high, eight times as long etc.) and correspondence problems in which m objects are connected to n objects (for example, 3 hats and 4 coats, how many	Core knowledge 1. Pupils will know how to add and subtract fractions with the same denominator within one whole 2. Pupils will know how to recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators 3. Pupils will know how to recognise and show, using diagrams, equivalent fractions with small denominators 4. Pupils will know how to add and subtract fractions with the same denominator within one whole [for example, + =] Hinterland knowledge • Pupils will know how to understand the relation between unit fractions as operators (fractions of), and division by integers. • Pupils will know how to continue to recognise fractions in the context of parts of a whole, numbers, measurements, a shape, and unit fractions as a division of a quantity. • Pupils will know how to practise adding and subtracting fractions with the same denominator through a variety of increasingly complex problems to improve fluency.

measure, pupils continue to count in ones, tens and hundreds, so that they become fluent in the order and place value of numbers to 1000
 	
Skills
• Pupils will develop their fluency through identifying the value of digits in numbers
• Pupils will develop their comparison skills
• Pupils will be able to develop their understanding of different representations.
 	
Wonder
• *I wonder what patterns I can identify when counting in multiples*
• *I wonder what different numbers look like when I use different equipment and representations.*
 	
Experiences & Provocations
• Pupils will experience the curriculum by:
  ○ White Rose.
  ○ Nrich problems.
  ○ CPA approach.
 	
Vocabulary - Tier 3 Subject Specific
Place value, thousand, hundred, ten, one, digit, multiple, numeral, more, less, compare, identify, whole, part, represent, interval
	different outfits; 12 sweets shared equally between 4 children; 4 cakes shared equally between 8 children).
	
	Skills
	• Pupils will develop their problem-solving skills to solve multiplication and division problems.
	• Pupils will develop their fluency of times table facts and number facts.
	
	Wonder
	• *I wonder which strategies would best help me solve this problem.*
	• *I wonder how many ways I could solve this problem.*
	
	Experiences & Provocations
	• Pupils will experience the curriculum by:
	  ○ White Rose.
	  ○ Nrich problems.
	  ○ CPA approach.
	
	Vocabulary - Tier 3 Subject Specific
	Commutative, calculate, multiple, equal, group, lots of, share, array, double, multiply, divide
		Skills
		• Pupils will develop being able to recognise fractions in different representations
		• Pupils will develop being able to compare fractions
		• Pupils will develop being able to identify equivalent fractions
		• Pupils will develop being able to add fractions
		
		Wonder
		• *I wonder what happens when you add fractions*
		• *I wonder how I can use bar models and diagrams to show fractions*
		
		Experiences & Provocations
		• Pupils will experience the curriculum by:
		  ○ White Rose.
		  ○ Nrich problems.
		  ○ CPA approach.
		
		Vocabulary - Tier 3 Subject Specific
		Unit fraction, non-unit fraction, numerator, denominator, partition, equivalent, compare, measure, split, bar model, representation, estimate, equal, part, whole, add, subtract, divide

Addition and Subtraction	Length and Perimeter	Money
Core Knowledge 1. Pupils will know how to add and subtract numbers mentally, including: a three-digit number and ones; a three-digit number and tens; a three-digit number and hundreds. 2. Pupils will know how to add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction. 3. Pupils will know how to solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. 4. Pupils will know how to estimate the answer to a calculation and use inverse operations to check answers Hinterland knowledge • Pupils will know how to practise solving varied addition and subtraction questions. For mental calculations with two-digit numbers, the answers could exceed 100. • Pupils know how to use their understanding of place value and partitioning, and practise using columnar addition and subtraction with	Core knowledge 1. Pupils will know how to measure, compare, add and subtract: lengths (m/cm/mm); 2. Pupils will know how to measure the perimeter of simple 2-D shapes Hinterland knowledge • Pupils will know how to continue to measure using the appropriate tools and units, progressing to using a wider range of measures, including comparing and using mixed units (for example, 1 kg and 200g) and simple equivalents of mixed units (for example, 5m = 500cm). • Pupils will know how to compare measures includes simple scaling by integers (for example, a given quantity or measure is twice as long or 5 times as high) and this connects to multiplication. Skills • Pupils will develop being able to compare different units of measure • Pupils will develop being able to identify the correct unit of measure.	Core knowledge 1. Pupils will know how to add amounts of money to give change, using both £ and p in practical contexts 2. Pupils will know how to subtract amounts of money to give change, using both £ and p in practical contexts Hinterland knowledge • Pupils will know how to continue to become fluent in recognising the value of coins, by adding and subtracting amounts, including mixed units, and giving change using manageable amounts. They record £ and p separately. The decimal recording of money is introduced formally in year 4. Skills • Pupils will develop being able to add amounts of money together • Pupils will develop being able to find the difference between amounts Wonder

increasingly large numbers up to three digits to become fluent

Skills
- Pupils will develop written and mental methods to solve addition and subtraction calculations.
- Pupils will develop problem solving skills
- Pupils will develop skills to help them estimate answers
- Pupils will develop strategies to check that their answers are correct

Wonder
- *I wonder why subtraction is the inverse of addition.*
- *I wonder why you need to estimate the answer.*
- *I wonder how many ways there are to partition a number*

Experiences & Provocations
- Pupils will experience the curriculum by:
  - White Rose.
  - Nrich problems.
  - CPA approach.

Vocabulary - Tier 3 Subject Specific

- Pupils will develop being able to measure the length of sides of a 2D shape

Wonder
- *I wonder what the perimeter of our school field is.*
- *I wonder what the length of .... is.*

Experiences & Provocations
- Pupils will experience the curriculum by:
  - White Rose.
  - Nrich problems.
  - CPA approach.

Vocabulary - Tier 3 Subject Specific
Measure, ruler, cm, mm, m, perimeter, interval, partition, shorter, longer, compare, accurate, equivalent, convert

<u>Fractions A</u>

Core knowledge
1. Pupils will know how to recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators

- *I how much... is.*
- *I wonder how many different coins I can use to make...*
- *I wonder what the least number of coins would*

Experiences & Provocations
- Pupils will experience the curriculum by:
  - White Rose.
  - Nrich problems.
  - CPA approach.

Vocabulary - Tier 3 Subject Specific
£, p, pounds, pence, altogether, difference, coin, note, change, partition, equal, add, subtract, amounts, money,

<u>Time</u>

Core knowledge
1. Pupils will know how to tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks
2. Pupils will know how to estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock,

Complement, partition, hundreds, tens, ones, part-whole, add, subtract, plus, minus, sum, total, difference, increase, decrease, column, digit, exchange, solve, estimate, less than, greater than, equal to, inverse <u>Multiplication and Division A</u> Core Knowledge 1. Pupils will know how to 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 2. Pupils will know how to show that multiplication of two numbers can be done in any order (commutative) and division on one number by another cannot (Y2) 3. Pupils will know how to count in steps of 2, 3 and 5 from 0, and in 10s from any number, forward and backward (Y2) 4. Pupils will know how to recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers (Y2)	2. Pupils will know how to compare and order unit fractions, and fractions with the same denominators 3. Pupils will know how to measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) 4. Pupils will know how to recognise and show, using diagrams, equivalent fractions with small denominators Hinterland knowledge • Pupils will know how to begin to understand unit and non-unit fractions as numbers on the number line, and deduce relations between them, such as size and equivalence. They should go beyond the [0, 1] interval, including relating this to measure. • Pupils will know how to understand the relation between unit fractions as operators (fractions of), and division by integers. • Pupils will know how to recognise fractions in the context of parts of a whole, numbers, measurements, a shape, and unit fractions as a division of a quantity. Skills • Pupils will develop being able to recognise fractions in different representations	am/pm, morning, afternoon, noon and midnight 3. Pupils will know the number of seconds in a minute and the number of days in each month, year and leap year 4. Pupils will know how to compare the duration of events. Hinterland knowledge • Pupils will know how to use both analogue and digital 12-hour clocks and record their times. In this way they become fluent in and prepared for using digital 24-hour clocks in year 4. Skills • Pupils will develop being able to recognise the time in different representations • Pupils will develop being able sequence in time order • Pupils will develop being able to identify different measures of time. Wonder • *I wonder who invented time and calendars* • *I wonder what leap years are* • *I wonder why analogue clocks start from 1 and finish at 12.*

5. Pupils will know how to recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables

Hinterland knowledge

- Pupils will know how to practise their mental recall of multiplication tables when they are calculating mathematical statements in order to improve fluency. Through doubling, they connect the 2, 4 and 8 multiplication tables.
- Pupils will know how to develop efficient mental methods, for example, using commutativity and associativity (for example, $4 \times 12 \times 5 = 4 \times 5 \times 12 = 20 \times 12 = 240$) and multiplication and division facts (for example, using $3 \times 2 = 6$, $6 \div 3 = 2$ and $2 = 6 \div 3$) to derive related facts (for example, $30 \times 2 = 60$, $60 \div 3 = 20$ and $20 = 60 \div 3$).
- Pupils will know how to develop reliable written methods for multiplication and division, starting with calculations of two-digit numbers by one-digit numbers and progressing to the formal written methods of short multiplication and division

Skills

- Pupils will develop being able to compare fractions
- Pupils will develop being able to identify equivalent fractions

Wonder

- *I wonder where I can see fractions in the classroom and at home*
- *I wonder how many ways I can show a fraction*

Experiences & Provocations

- Pupils will experience the curriculum by:
  - White Rose.
  - Nrich problems.
  - CPA approach.

Vocabulary - Tier 3 Subject Specific

Unit fraction, non-unit fraction, numerator, denominator, partition, equivalent, compare, measure, split, bar model, representation, estimate, equal, part, whole

<u>Mass and capacity</u>

Core knowledge

1. Pupils will know how to measure mass (kg/g)
2. Pupils will know how to measure volume/capacity (l/ml)

Experiences & Provocations

- Pupils will experience the curriculum by:
  - White Rose.
  - Nrich problems.
  - CPA approach.

Vocabulary - Tier 3 Subject Specific

Time, calendar, seconds, minutes, hours, days, week, fortnight, month, year, decade, leap year, roman numeral, digital, analogue

<u>Shape</u>

Core knowledge

1. Pupils will know how to recognise angles as a property of shape or a description of a turn
2. Pupils will know how to identify right angles, recognise that two right angles make a half turn, three make three-quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle
3. Pupils will know how to measure the perimeter of simple 2-D shapes
4. Pupils will know how to draw 2-D shapes and make 3-D shapes using modelling

- Pupils will develop written and mental methods to solve multiplication and division calculations.
- Pupils will develop fluency of times tables

Wonder

- *I wonder why commutativity works for multiplication but not division.*
- *I wonder how times tables can help me solve multiplication and division calculations.*

Experiences & Provocations

- Pupils will experience the curriculum by:
  - White Rose.
  - Nrich problems.
  - CPA approach.

Vocabulary - Tier 3 Subject Specific

Commutative, calculate, multiple, equal, group, lots of, share, array, double, multiply, divide

3.

Hinterland knowledge

- Pupils will know how to continue to measure using the appropriate tools and units, progressing to using a wider range of measures, including comparing and using mixed units (for example, 1 kg and 200g) and simple equivalents of mixed units (for example, 5m = 500cm).
- Pupils will know how to compare measures includes simple scaling by integers (for example, a given quantity or measure is twice as long or 5 times as high) and this connects to multiplication.

Skills

- Pupils will develop being able to compare different units of measure
- Pupils will develop being able to identify the correct unit of measure.

Wonder

- *I wonder what the capacity of …. is*
- *I wonder what the mass of … is*

materials; recognise 3-D shapes in different orientations and describe them

5. Pupils will know how to measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)
6. Pupils will know how to identify horizontal and vertical lines and pairs of perpendicular and parallel lines

Hinterland knowledge

- Pupils will know how to Pupils' knowledge of the properties of shapes is extended at this stage to symmetrical and non-symmetrical polygons and polyhedra.
- Pupils know how to extend their use of the properties of shapes. They should be able to describe the properties of 2-D and 3-D shapes using accurate language, including lengths of lines and acute and obtuse for angles greater or lesser than a right angle.
- Pupils will know how to connect decimals and rounding to drawing and measuring straight lines in centimetres, in a variety of contexts.

Skills

- Pupils will develop being able to identify 2D and 3D shapes by their properties

	Experiences & Provocations
	• Pupils will experience the curriculum by:
	  ○ White Rose.
	  ○ Nrich problems.
	  ○ CPA approach.
	
	Vocabulary - Tier 3 Subject Specific
	Measure, mass, capacity, calculate, approximate, intervals, total, difference, equivalent, l, ml, g, kg, volume, scale, heavier, lighter, compare
		• Pupils will develop being able to identify different angles
		
		identify / recognise / describe / observe / recall / compare / contrast / infer / sequence / summarise / categorise / reason / interpret / synthesise / explain / justify / conclude / judge / evaluate / critique / empathise / hypothesise
		
		Wonder
		• *I wonder how many different angles I can find in the classroom/at home.*
		• *I wonder how many different shapes I can find in the classroom/at home*
		
		Experiences & Provocations
		• Pupils will experience the curriculum by:
		  ○ White Rose.
		  ○ Nrich problems.
		  ○ CPA approach.
		
		Vocabulary - Tier 3 Subject Specific
		Angle, parallel, perpendicular, straight, vertical, horizontal, line, properties, quarter, half, three-quarter, full turn, right angle, less than, greater than, edges, faces, vertices, flat, curved

		<u>Statistics</u> Core knowledge 1. Pupils will know how to interpret and present data using bar charts, pictograms and tables 2. Pupils will know how to solve one-step and two-step questions using information presented in scaled bar charts and pictograms and tables Hinterland knowledge • Pupils will know how to understand and use simple scales (for example, 2, 5, 10 units per cm) in pictograms and bar charts with increasing accuracy. • Pupils will know how to continue to interpret data presented in many contexts. Skills • Pupils will develop being able to describe the data that it is being represented in a graph or chart. • Pupils will develop being able to identify what a graph is showing. Wonder • *I wonder who invented graphs and charts*

		• *I wonder what graphs and charts are used for.*
		
		Experiences & Provocations
		• Pupils will experience the curriculum by:
		  ○ White Rose.
		  ○ Nrich problems.
		  ○ CPA approach.
		
		Vocabulary - Tier 3 Subject Specific
		Table, two-way table, column, row, bar chart, pictogram, tally, total, data, axis, most, least, greatest, interpret, equal

Year 4 Mathematics Curriculum		
Autumn Term	Spring Term	Summer Term
Place value Core Knowledge 1. Pupils will know how to read and write numbers up to 1,000 in numerals and words (Y3) 2. Pupils will know how to identify, represent and estimate numbers using different representations	Multiplication and Division B Core Knowledge 1. Pupils will know how to recognise and use factor pairs and commutativity in mental calculations 2. Pupils will know how to recall multiplication and division facts for multiplication tables up to 12 × 12	Decimals B Core Knowledge 1. Pupils will know how to recognise and write decimal equivalents of any number of tenths or hundredths 2. Pupils will know how to solve simple measure and money problems involving fractions and decimals to 2 decimal places

3. Pupils will know how to recognise the place value of each digit in a 3-digit number (hundreds, tens, ones) (Y3) 4. Pupils will know how to count in multiples of 6, 7, 9, 25 and 1,000 5. Pupils will know how to recognise the place value of each digit in a 4-digit number (thousands, hundreds, tens and ones) 6. Pupils will know how to find 1,000 more or less than a given number 7. Pupils will know how to order and compare numbers beyond 1,000 8. Pupils will know how to read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value 9. Pupils will know how to round any number to the nearest 10, 100 or 1,000 Hinterland Knowledge • Pupils will know how to use a variety of representations, including measures, pupils become fluent in the order and place value of numbers beyond 1,000, including counting in 10s and 100s, and maintaining fluency in other multiples through varied and frequent practice.	3. Pupils will know how to multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000 (Y5) 4. Pupils will know how to solve problems involving multiplying and adding, including using the distributive law to multiply 2-digit numbers by 1 digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects 5. Pupils will know how to recognise and use factor pairs and commutativity in mental calculations 6. Pupils will know how to multiply 2-digit and 3-digit numbers by a 1-digit number using formal written layout 7. Pupils will know how to use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together 3 numbers Hinterland Knowledge • Pupils will know how to write statements about the equality of expressions (for example, use the distributive law 39 × 7 = 30 × 7 + 9 × 7 and associative law (2 × 3) × 4 = 2 × (3 × 4)). They combine their knowledge of number facts and rules of arithmetic to	3. Pupils will know how to compare numbers with the same number of decimal places up to 2 decimal places 4. Pupils will know how to round decimals with 1 decimal place to the nearest whole number 5. Pupils will know how to recognise and write decimal equivalents to ¼, ½ and ¾ Hinterland Knowledge • Pupils will know decimal notation and the language associated with it, including in the context of measurements. They make comparisons and order decimal amounts and quantities that are expressed to the same number of decimal places. They should be able to represent numbers with 1 or 2 decimal places in several ways, such as on number lines. Skills • Pupils will develop being able to compare decimals and fractions • Pupils will develop being able to order and sequence decimals • Pupils will develop being able to recognise

- Pupils will know how to begin to extend their knowledge of the number system to include the decimal numbers and fractions that they have met so far.
- Pupils will know how to connect estimation and rounding numbers to the use of measuring instruments.
- Pupils will know how Roman numerals should be put in their historical context so pupils understand that there have been different ways to write whole numbers and that the important concepts of 0 and place value were introduced over a period of time.

Skills

- Pupils will develop being able to compare numbers
- Pupils will develop being able to identify the value of digits within a number
- Pupils will develop being able to sequence numbers in ascending and descending order

Wonder

- *I wonder why place value is so important*

solve mental and written calculations for example, 2 x 6 x 5 = 10 x 6 = 60.

- Pupils will know how to solve two-step problems in contexts, choosing the appropriate operation, working with increasingly harder numbers. This should include correspondence questions such as the numbers of choices of a meal on a menu, or 3 cakes shared equally between 10 children.

Skills

- Pupils will develop being able to compare different methods and representations
- Pupils will develop being able to identify factor pairs
- Pupils will develop being able to solve calculations using different strategies

Wonder

- *I wonder what is the same and what is different about multiplying by 1s and multiplying by 10s*
- *I wonder the written method matches the representation*

Experiences & Provocations

Wonder

- *I wonder how many ways I can show equivalent decimals and fractions*
- *I wonder what the connections are between fractions and decimals*
- *I wonder how money and decimals are linked*

Experiences & Provocations

- Pupils will experience the curriculum by:
  - White Rose.
  - Nrich problems.
  - CPA approach

Vocabulary - Tier 3 Subject Specific

Tenths, hundredths, whole, part, equal, part-whole model, difference, split, partition, greater than, less than, round, nearest, convert

Money

Core Knowledge

1. Pupils will know how to estimate, compare and calculate different measures, including money in pounds and pence

Hinterland Knowledge

- *I wonder where and when I might use rounding*
- *I wonder how someone came up with roman numerals.*

Experiences & Provocations

- Pupils will experience the curriculum by:
  - White Rose.
  - Nrich problems.
  - CPA approach

Vocabulary - Tier 3 Subject Specific

Digit, thousand, hundred, ten, one, place value, greatest, greater than, less than, column, ascending, descending, represent, multiples, round, nearest, same, different

Addition and Subtraction

Core Knowledge

1. Pupils will know how to add and subtract numbers with up to four digits using the formal written methods of columnar addition and subtraction where appropriate
2. Pupils will know how to solve addition and subtraction two-step problems in contexts,

- Pupils will experience the curriculum by:
  - White Rose.
  - Nrich problems.
  - CPA approach

Vocabulary - Tier 3 Subject Specific

Array, commutativity, calculate, multiply, divide, equal, groups, share, partition, factor, multiple, pairs, double, half, distributive, possibilities, combinations, remainder, part-whole model, exchange,

Length and Perimeter

Core Knowledge

1. Pupils will know how to convert between different units of measure [for example, kilometre to metre; hour to minute]
2. Pupils will know how to measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres

Hinterland Knowledge

- Pupils will know how to use multiplication to convert from larger to smaller units.

- Pupils will know that decimals and fractions are different ways of expressing numbers and proportions, including money

Skills

- Pupils will develop being able to convert decimals to money
- Pupils will develop being able to identify different units

Wonder

- *I wonder who invented money and the different coins and notes.*
- *I wonder why money is different in different countries*

Experiences & Provocations

- Pupils will experience the curriculum by:
  - White Rose.
  - Nrich problems.
  - CPA approach

Vocabulary - Tier 3 Subject Specific

Pounds, pence, exchange, partition, total, difference, altogether, approximate, estimate, ascending, descending, greater than, less than

deciding which operations and methods to use and why
3. Pupils will know how to estimate and use inverse operations to check answers to a calculation
 	
Hinterland Knowledge
• Pupils will know how to continue to practise both mental methods and columnar addition and subtraction with increasingly large numbers to aid fluency
 	
Skills
• Pupils will develop being able to estimate answers
• Pupils will develop being able to add and subtract using their number bonds and place value knowledge to improve their fluency
• Pupils will develop being able to compare their answers by using different strategies
 	
Wonder
• *I wonder who developed the different methods of addition and subtraction*
• *I wonder why subtraction is the inverse of addition*
	• Pupils will know how perimeter can be expressed algebraically as 2(a + b) where a and b are the dimensions in the same unit.
	
	Skills
	• Pupils will develop being able to compare the perimeter of different shapes
	• Pupils will develop being able to convert measures
	
	Wonder
	• *I wonder what the perimeter of the school field is.*
	• *I wonder how I can calculate the perimeter of a rectilinear shape*
	
	Experiences & Provocations
	• Pupils will experience the curriculum by:
	  ○ White Rose.
	  ○ Nrich problems.
	  ○ CPA approach
	
	Vocabulary - Tier 3 Subject Specific
	Rectilinear, perimeter, units of measure, algebra, formulae, expression
		Time
		
		Core Knowledge
		1. Pupils will know how to solve problems involving converting from hours to minutes, minutes to seconds, years to months, weeks to days
		2. Pupils will know how to read, write and convert time between analogue and digital 12- and 24-hour clocks
		
		Hinterland Knowledge
		• Pupils will know how to build on their learning from year 3 to practise converting times from the 12 to 24 hour clock
		
		Skills
		• Pupils will develop being able to compare the 12 and 24hr clock and convert times
		
		Wonder
		• *I wonder who came up with the 24hr clock*
		• *I wonder if there are any ways to help convert the 12 hr to 24 hr clock*
		• *I wonder which is more popular: analogue or digital*

Experiences & Provocations

- Pupils will experience the curriculum by:
  - White Rose.
  - Nrich problems.
  - CPA approach

Vocabulary - Tier 3 Subject Specific

Estimate, inverse, add, subtract, difference, sum, total, formal method, part, whole, commutative, efficient, exchange, column

Area

Core Knowledge

1. Pupils will know how to find the area of rectilinear shapes by counting squares

Hinterland Knowledge

- Pupils will know how they can relate area to arrays and multiplication.

Skills

- Pupils will develop being able to identify the area of shapes by counting squares.
- Pupils will develop being able to measure the area of rectilinear shapes

Fractions

Core Knowledge

1. Pupils will know how to recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators (Y3)
2. Pupils will know how to recognise and show, using diagrams, families of common equivalent fractions
3. Pupils will know how to add and subtract fractions with the same denominator

Hinterland Knowledge

- Pupils will know how to connect hundredths to tenths and place value and decimal measure.
- Pupils will know how to extend the use of the number line to connect fractions, numbers and measures.
- Pupils will know how to understand the relation between non-unit fractions and multiplication and division of quantities, with particular emphasis on tenths and hundredths
- Pupils will know how to make connections between fractions of a length, of a shape and

Experiences & Provocations

- Pupils will experience the curriculum by:
  - White Rose.
  - Nrich problems.
  - CPA approach

Vocabulary - Tier 3 Subject Specific

Time, calendar, seconds, minutes, hours, days, week, fortnight, month, year, decade, leap year, roman numeral, digital, analogue

Shape

Core Knowledge

1. Pupils will know how to recognise angles as a property of shape or a description of a turn (Y3)
2. Pupils will know how to identify acute and obtuse angles and compare and order angles up to two right angles by size
3. Pupils will know how to compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes

Wonder

- *I wonder what the area of our playground/field is*
- *I wonder what the area of … is*

Experiences & Provocations

- Pupils will experience the curriculum by:
  - White Rose.
  - Nrich problems.
  - CPA approach

Vocabulary - Tier 3 Subject Specific

measure, area, squares, rectilinear, surface area, array

Multiplication and Division A

Core Knowledge

1. Pupils will know how to recall multiplication and division facts for multiplication tables up to 12 × 12
2. Pupils will know how to recognise and use factor pairs and commutativity in mental calculations
3. Pupils will know how to count in multiples of 6, 7, 9, 25 and 1,000

as a representation of one whole or set of quantities. Pupils use factors and multiples to recognise equivalent fractions and simplify where appropriate (for example, = or =).

- Pupils will know how to continue to practise adding and subtracting fractions with the same denominator, to become fluent through a variety of increasingly complex problems beyond one whole.

Skills

- Pupils will develop being able to compare fractions in different representations
- Pupils will develop being able to recognise families of fractions and equivalence

Wonder

- *I wonder how many ways I can express a fraction*
- *I wonder what happens when I add fractions or subtract them*

Experiences & Provocations

- Pupils will experience the curriculum by:

4. Pupils will know how to identify lines of symmetry in 2-D shapes presented in different orientations
5. Pupils will know how to complete a simple symmetric figure with respect to a specific line of symmetry

Hinterland Knowledge

- Pupils will know how to continue to classify shapes using geometrical properties, extending to classifying different triangles (for example, isosceles, equilateral, scalene) and quadrilaterals (for example, parallelogram, rhombus, trapezium).
- Pupils will know how to compare and order angles in preparation for using a protractor and compare lengths and angles to decide if a polygon is regular or irregular.
- Pupils will know how to draw symmetric patterns using a variety of media to become familiar with different orientations of lines of symmetry; and recognise line symmetry in a variety of diagrams, including where the line of symmetry does not dissect the original shape.

Skills

4. Pupils will know how to 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

Hinterland Knowledge

- Pupils will know how to continue to practise recalling and using multiplication tables and related division facts to aid fluency.
- Pupils will know how to practise mental methods and extend this to 3-digit numbers to derive facts, (for example 600 ÷ 3 = 200 can be derived from 2 x 3 = 6).
- Pupils will know how to practise to become fluent in the formal written method of short multiplication and short division with exact answers

Skills

- Pupils will develop being able to identify times table facts
- Pupils will develop being able to use known facts to improve their fluency

- White Rose.
- Nrich problems.
- CPA approach

Vocabulary - Tier 3 Subject Specific

Parts, equal, shaded, equivalent, representation, whole, forwards, backwards, mixed number, denominator, numerator, partition, interval, estimate, improper fraction, groups, remainder, convert

Decimals A

Core Knowledge

1. Pupils will know how to count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing 1-digit numbers or quantities by 10 (Y3)
2. Pupils will know how to recognise and write decimal equivalents of any number of tenths or hundredths
3. Pupils will know how to compare numbers with the same number of decimal places up to 2 decimal places

- Pupils will develop being able to compare the size of angles
- Pupils will develop being able to identify angles in shape and lines of symmetry

Wonder

- *I wonder what angles I will find in different shapes*
- *I wonder how many lines of symmetry there are in shapes*

Experiences & Provocations

- Pupils will experience the curriculum by:
  - White Rose.
  - Nrich problems.
  - CPA approach

Vocabulary - Tier 3 Subject Specific

Clockwise, anti-clockwise, turn, full, ¼, ½, ¾, angle, obtuse, acute, right angle

Statistics

Core Knowledge

1. Pupils will know how to interpret and present discrete and continuous data using

Wonder

- *I wonder what happens when you multiply a number by 0*
- *I wonder how factor pairs can help me solve multiplication and division calculations*

Experiences & Provocations

- Pupils will experience the curriculum by:
  - White Rose.
  - Nrich problems.
  - CPA approach

Vocabulary - Tier 3 Subject Specific

Array, commutativity, calculate, multiply, divide, equal, groups, share, partition, factor, multiple, pairs, double, half

4. Pupils will know how to find the effect of dividing a 1- or 2-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths
5. Pupils will know how to count up and down in hundredths; recognise that hundredths arise when dividing an object by 100 and dividing tenths by 10
6. Pupils will know how to recognise and show, using diagrams, families of common equivalent fractions

Hinterland Knowledge

- Pupils will know how to understand the number system and decimal place value is extended at this stage to tenths and then hundredths. This includes relating the decimal notation to division of whole number by 10 and later 100.
- Pupils will know how to practise counting using simple fractions and decimals, both forwards and backwards.
- Pupils will know how to learn decimal notation and the language associated with it, including in the context of measurements. They make comparisons and order decimal amounts and quantities that are expressed to the same number of decimal places. They

appropriate graphical methods, including bar charts and time graphs

2. Pupils will know how to solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs

Hinterland Knowledge

- Pupils will know how to understand and use a greater range of scales in their representations.
- Pupils will know how to begin to relate the graphical representation of data to recording change over time.
-

Skills

- Pupils will develop being able to interpret graph data
- Pupils will develop being able to compare graphs and charts

Wonder

- *I wonder what a graph is showing*
- *I wonder which graph would best represent the data*

	should be able to represent numbers with 1 or 2 decimal places in several ways, such as on number lines.
	
	Skills
	• Pupils will develop being able to recognise the value of decimal places
	• Pupils will develop being able to order decimal numbers
	• Pupils will develop being able to sequence decimal numbers
	
	Wonder
	• *I wonder how many decimal places there are*
	• *I wonder how decimal numbers are used*
	
	Experiences & Provocations
	• Pupils will experience the curriculum by:
	  ○ White Rose.
	  ○ Nrich problems.
	  ○ CPA approach
	
	Vocabulary - Tier 3 Subject Specific
	Fraction, tenth, hundredth equal, parts, decimal place, equivalent, column, place value, represent
		Experiences & Provocations
		• Pupils will experience the curriculum by:
		  ○ White Rose.
		  ○ Nrich problems.
		  ○ CPA approach
		
		Vocabulary - Tier 3 Subject Specific
		Horizontal, axis, table, scale, vertical, bar chart, graph, pictogram,
		
		Position and Direction
		
		Core Knowledge
		1. Pupils will know how to describe positions on a 2-D grid as coordinates in the first quadrant
		2. Pupils will know how to plot specified points and draw sides to complete a given polygon
		3. Pupils will know how to describe movements between positions as translations of a given unit to the left/right and up/down
		
		Hinterland Knowledge

		• Pupils will know how to draw a pair of axes in one quadrant, with equal scales and integer labels. They read, write and use pairs of co-ordinates, for example (2, 5), including using co-ordinate-plotting ICT tools.
		
		Skills
		• Pupils will develop being able to identify co-ordinates and plot these to create shapes
		• Pupils will develop being able to describe position and movement
		
		Wonder
		• *I wonder where co-ordinates are used*
		• *I wonder how I could use co-ordinates*
		
		Experiences & Provocations
		• Pupils will experience the curriculum by:
		  ○ White Rose.
		  ○ Nrich problems.
		  ○ CPA approach
		
		Vocabulary - Tier 3 Subject Specific
		Co-ordinates, point, axis, values, first quadrant, plot, horizontal, vertical, translation, movement, vertices

Year 5 Mathematics Curriculum		
Autumn Term	Spring Term	Summer Term
<u>Place Value</u> Core Knowledge 6. Pupils will know how to read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit 7. Pupils will know how to count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000	<u>Multiplication and division</u> Core Knowledge 1. Pupils will know how to 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 2. Pupils will know how to multiply and divide numbers mentally drawing upon known facts	<u>Shape</u> Core Knowledge 1. Pupils will know how to identify 3-D shapes, including cubes and other cuboids, from 2-D representations 2. Pupils will know that angles are measured in degrees: estimate and compare acute, obtuse and reflex angles 3. Pupils will know how to draw given angles, and measure them in degrees (°)

8. Pupils will know how to round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 9. Pupils will know how to solve number problems and practical problems that involve all of the above 10. Pupils will know how to read Roman numerals to 1000 (M) and recognise years written in Roman numerals. Hinterland Knowledge • Pupils will know how to partition numbers up to 1,000,000. • Pupils will know how to use the CPA approach to represent numbers up to 1,000,000. Skills • Pupils will develop being able to problem solve. • Pupils will develop being able to be fluent with number. • Pupils will develop being able to sequence numbers. Wonder • *I wonder why this number is greater than this one.* • *I wonder how to prove my answer.*	3. Pupils will know how to 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 4. Pupils will know how to solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes 5. Pupils will know how to solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign 6. Pupils will know how to solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates. Hinterland Knowledge • Pupils will know why it is sometimes better to solve a problem mentally and when it's best to use a method. • Pupils will know that there is more than one method to use to solve a question. Skills • Pupils will develop being able to recall.	4. Pupils will know the 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°) and other multiples of 90° 5. Pupils will know how to use the properties of rectangles to deduce related facts and find missing lengths and angles 6. Pupils will know how to distinguish between regular and irregular polygons based on reasoning about equal sides and angles. Hinterland Knowledge • Pupils will know how to use practical experiments in order to learn about shapes and angles. • Pupils will know how to use basic knowledge of shape and angles to answer problem solving questions. Skills • Pupils will develop being able to describe properties of shapes. • Pupils will develop being able to recall key facts about angles. • Pupils will develop being able to justify.

Experiences & Provocations

- Pupils will experience the curriculum by:
  - White Rose.
  - Nrich problems.
  - CPA approach.

Vocabulary - Tier 3 Subject Specific

Powers of 10, Tenths, hundredths, decimal (places), round (to nearest), thousand more/less than, negative integers, count through zero, Roman numerals I to C,

<u>Addition and subtraction.</u>

Core Knowledge

1. Pupils will know how to add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)
2. Pupils will know how to add and subtract numbers mentally with increasingly large numbers
3. Pupils will know how to use rounding to check answers to calculations and determine,

- Pupils will develop being able to explain.
- Pupils will develop being able to justify.
- Pupils will develop being able to categorise.

Wonder

- *I wonder when it's best to use a formal method and when it's best to use a mental method.*
- *I wonder whether I could solve this question in a different way.*

Experiences & Provocations

- Pupils will experience the curriculum by:
  - White Rose.
  - Nrich problems.
  - CPA approach

Vocabulary - Tier 3 Subject Specific

Multiply, multiply by, repeated addition, array, row, column, double, halve, share, share equally, group in pairs, threes, etc., equal groups of, divide, divided by, left over, Factor pairs, composite numbers, prime number, prime factors, square number, cubed number, formal written method

<u>Fractions</u>

Core Knowledge

Wonder

- *I wonder how I can tell that this shape is a rectangle even though it's irregular.*
- *I wonder how to tell the difference between a regular and irregular shape.*

Experiences & Provocations

- Pupils will experience the curriculum by:
  - White Rose.
  - Nrich problems.
  - CPA approach

Vocabulary - Tier 3 Subject Specific

Regular and irregular polygons, Quadrilaterals, triangles, right, acute and obtuse angles, Horizontal, perpendicular and parallel lines

<u>Position and direction</u>

Core Knowledge

1. Pupils will know how to 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.

in the context of a problem, levels of accuracy
4. Pupils will know how to solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
 	
Hinterland Knowledge
• Pupils will know why it is good to sometimes use formal methods and when they can solve a calculation mentally.
• Pupils will know how to use the inverse method to check their answer is correct.
 	
Skills
• Pupils will develop being able to check.
• Pupils will develop being able to explain.
• Pupils will develop being able to justify.
 	
Wonder
• *I wonder which method would be the best to solve this question.*
• *I wonder how to check my answer.*
 	
Experiences & Provocations
• Pupils will experience the curriculum by:
	1. Pupils will know how to multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams
	
	Hinterland Knowledge
	• Pupils will know how to represent fractions in different contexts.
	• Pupils will know why it's important to learn about fractions and be able to solve real world examples.
	
	Skills
	• Pupils will develop being able to explain.
	• Pupils will develop being able to justify.
	• Pupils will develop being able to recognise.
	
	Wonder
	• *I wonder how to represent fractions in different ways.*
	• *I wonder why we learn about fractions.*
	
	Experiences & Provocations
	• Pupils will experience the curriculum by:
	  ○ White Rose.
	  ○ Nrich problems.
	  ○ CPA approach.
		Hinterland Knowledge
		• Pupils will know how to use coordinates to explain the position of a shape.
		• Pupils will know how to use their basic knowledge of position and direction to answer more complex questions.
		
		Skills
		• Pupils will develop being able to describe the position of the shape.
		• Pupils will develop being able to observe how the movement of the shape has changed.
		• Pupils will develop being able to identify where the shape will move to after translation/reflection.
		Wonder
		• *I wonder how to translate a shape.*
		• *I wonder why the shape doesn't change after reflection or translation.*
		• *I wonder what the shape looked like before it was translated/reflected.*
		
		Experiences & Provocations
		• Pupils will experience the curriculum by:
		  ○ White Rose.
		  ○ Nrich problems.
		  ○ CPA approach.

○ White Rose. ○ Nrich problems. ○ CPA approach. Vocabulary - Tier 3 Subject Specific Efficient written method, , number line, column addition and subtraction, add, more, plus, make, sum, total, altogether, inverse, double, near double, equals, is the same as (including equals sign), difference between, subtract, take away, minus <u>Multiplication and division</u> Core Knowledge 2. Pupils will know how to identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers 3. Pupils will know how to know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers	Vocabulary - Tier 3 Subject Specific Proper fractions, improper fractions, mixed numbers, percentage, half, quarter, fifth, two fifths, four fifths, ratio, proportion, Numerator, denominator, unit fraction, non-unit fraction, compare and order, tenths <u>Decimals and percentages</u> Core Knowledge 1. Pupils will know how to read and write decimal numbers as fractions [for example, $0.71 = \frac{71}{100}$] 2. Pupils will know how to recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents 3. Pupils will know how to round decimals with two decimal places to the nearest whole number and to one decimal place 4. Pupils will know how to read, write, order and compare numbers with up to three decimal places 5. Pupils will know how to solve problems involving number up to three decimal places 6. Pupils will know how to recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per	Vocabulary - Tier 3 Subject Specific Reflex angle, dimensions, Co-ordinate, translate, quadrant, X-axis, Y-axis, perimeter, area, Greater/less than ninety degrees, orientation (same orientation, different orientation), reflection, translation. <u>Decimals</u> Core Knowledge 1. Pupils will know how to read and write decimal numbers as fractions [for example, $0.71 = \frac{71}{100}$] 2. Pupils will know how to recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents 3. Pupils will know how to round decimals with two decimal places to the nearest whole number and to one decimal place

4. Pupils will know how to establish whether a number up to 100 is prime and recall prime numbers up to 19 5. Pupils will know how to multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 6. Pupils will know how to recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3}) Hinterland Knowledge • Pupils will know how to work systematically to find prime numbers, multiples and factors. • Pupils will know how to use manipulatives to help them solve questions. Skills • Pupils will develop being able to describe. • Pupils will develop being able to identify. • Pupils will develop being able to recall. • Pupils will develop being able to explain. Wonder • *I wonder how to work out multiples of 2.* • *I wonder how to use manipulatives to help me.* Experiences & Provocations • Pupils will experience the curriculum by:	hundred', and write percentages as a fraction with denominator 100, and as a decimal 7. Pupils will know how to 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 Hinterland Knowledge • Pupils will know how to use different methods to swap between fraction, decimals and percentages. • Pupils will be able to use problem solving skills and real-life problems with F,D,P. • Pupils will know how to represent a F,D and P in concrete, pictorial and abstract forms. Skills • Pupils will develop being able to justify. • Pupils will develop being able to identify. • Pupils will develop being able to represent. • Pupils will develop being able to explain. Wonder • *I wonder why F, D and P can be swapped between forms.* • *I wonder how to represent 52% in a picture form.*	4. Pupils will know how to read, write, order and compare numbers with up to three decimal places 5. Pupils will know how to solve problems involving number up to three decimal places Hinterland Knowledge • Pupils will know the difference between a decimal number and an integer. • Pupils will know how to represent a decimal number using manipulatives. Skills • Pupils will develop being able to justify. • Pupils will develop being able to identify. • Pupils will develop being able to represent. • Pupils will develop being able to explain. Wonder • *I wonder what a decimal is.* • *I wonder how to multiply a decimal by 10, 100, 1000.* Experiences & Provocations • Pupils will experience the curriculum by: ○ White Rose. ○ Nrich problems. ○ CPA approach.

○ White Rose. ○ Nrich problems. ○ CPA approach. Vocabulary - Tier 3 Subject Specific Multiply, multiply by, repeated addition, array, row, column, double, halve, share, share equally, group in pairs, threes, etc., equal groups of, divide, divided by, left over, Factor pairs, composite numbers, prime number, prime factors, square number, cubed number, formal written method <u>Fractions</u> Core Knowledge 1. Pupils will know how to compare and order fractions whose denominators are all multiples of the same number 2. Pupils will know how to identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths	Experiences & Provocations • Pupils will experience the curriculum by: ○ White Rose. ○ Nrich problems. ○ CPA approach. Vocabulary - Tier 3 Subject Specific Proper fractions, improper fractions, mixed numbers, percentage, half, quarter, fifth, two fifths, four fifths, ratio, proportion, equivalence. <u>Perimeter and area</u> Core Knowledge 1. Pupils will know how to measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres 2. Pupils will know how to calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes Hinterland Knowledge	Vocabulary - Tier 3 Subject Specific Tenths, hundredths, decimal tenths, decimal equivalence, decimal point, part-whole model, rounding, place value <u>Negative numbers</u> Core Knowledge 1. Pupils will know how to interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero Hinterland Knowledge • Pupils will know how to create a human number line and place negative numbers into it. • Pupils will be able to solve real world questions involving temperature and negative numbers. Skills • Pupils will develop being able to interpret. • Pupils will develop being able to sequence • Pupils will develop being able to compare. • Pupils will develop being able to justify.

3. Pupils will know how to 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, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$]
4. Pupils will know how to add and subtract fractions with the same denominator and denominators that are multiples of the same number

Hinterland Knowledge

- Pupils will know how to represent fractions in different contexts.
- Pupils will know why it's important to learn about fractions and be able to solve real world examples.

Skills

- Pupils will develop being able to explain.
- Pupils will develop being able to justify.
- Pupils will develop being able to recognise.

Wonder

- *I wonder how to represent fractions in different ways.*
- *I wonder why we learn about fractions.*

- Pupils will know how to create shapes and then find the perimeter of them.
- Pupils will know how to use the CPA approach to support them in finding the area and perimeter of shapes.

Skills

- Pupils will develop being able to interpret.
- Pupils will develop being able to recognise.
- Pupils will develop being able to evaluate.

Wonder

- *I wonder how to find the perimeter of a shape by measuring it.*
- *I wonder what formula I need to use to find the area of a rectangle.*

Experiences & Provocations

- Pupils will experience the curriculum by:
  - White Rose.
  - Nrich problems.
  - CPA approach.

Vocabulary - Tier 3 Subject Specific

metre kilometre perimeter length width rectangle rectilinear dimensions compound irregular multiply add

Wonder

- *I wonder why negative numbers begin at –1.*
- *I wonder why –5 is colder than –1.*

Experiences & Provocations

- Pupils will experience the curriculum by:
  - White Rose.
  - Nrich problems.
  - CPA approach.

Vocabulary - Tier 3 Subject Specific

Temperature, negative, minus, real world, number line, forwards, backwards, zero, positive, integer, decimal.

<u>Converting units of measurement</u>

Core Knowledge

1. Pupils will know how to convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)
2. Pupils will know how to understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints

Experiences & Provocations

- Pupils will experience the curriculum by:
  - White Rose.
  - Nrich problems.
  - CPA approach.

Vocabulary - Tier 3 Subject Specific

Proper fractions, improper fractions, mixed numbers, percentage, half, quarter, fifth, two fifths, four fifths, ratio, proportion, Numerator, denominator, unit fraction, non-unit fraction, compare and order, tenths

Statistics

Core Knowledge

1. Pupils will know how to solve comparison, sum and difference problems using information presented in a line graph
2. Pupils will know how to complete, read and interpret information in tables, including timetables.

Hinterland Knowledge

- Pupils will know how to create their own statistics and then put the information into a timetable and line graph.
- Pupils will know how to use inference to gather more information from a line graph.
- Pupils will know how to use the four operations in order to solve questions about timetables.

Skills

- Pupils will develop being able to interpret.
- Pupils will develop being able to conclude.
- Pupils will develop being able to observe.
- Pupils will develop being able to hypothesise.

Wonder

- *I wonder how to present my own data.*

3. Pupils will know how to solve problems involving converting between units of time
4. Pupils will know how to use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.

Hinterland Knowledge

- Pupils will know why it's helpful to convert between units of measure.
- Pupils will know how to solve some basic ratio questions.

Skills

- Pupils will develop being able to observe.
- Pupils will develop being able to recall.
- Pupils will develop being able to recognise.

Wonder

- *I wonder why you need to convert between units of measure.*
- *I wonder why it's important to be able to solve time related questions.*
- *I wonder how to change the recipe to serve 4 people instead of 2.*

Experiences & Provocations

	• *I wonder what the temperature might be at 9:30.*
	• *I wonder why people present information on line graphs and timetables.*
	
	Experiences & Provocations
	• Pupils will experience the curriculum by:
	  ○ White Rose.
	  ○ Nrich problems.
	  ○ CPA approach.
	
	Vocabulary - Tier 3 Subject Specific
	Continuous data, line graph, Chart, bar chart, frequency table, Carroll diagram, Venn diagram, axis, axe
		• Pupils will experience the curriculum by:
		  ○ White Rose.
		  ○ Nrich problems.
		  ○ CPA approach.
		
		Vocabulary - Tier 3 Subject Specific
		Volume, imperial units, metric units, convert, metres, kilometers, grams, kilograms, millimeters, liters, time, 24-hour, 12-hour, AM, PM, length, mass, money.
		
		<u>Volume</u>
		
		Core Knowledge
		1. Pupils will know how to estimate volume [for example, using 1 cm^3 blocks to build cuboids (including cubes)] and capacity [for example, using water]
		
		Hinterland Knowledge
		• Pupils will know how volume links to area.
		• Pupils will know the mathematical symbol for cubed and how it links to cubed numbers.
		• Pupils will know how to create shapes and then measure their volume.
		• Pupils will know how to solve volume mathematically.

		Skills
		• Pupils will develop being able to explain.
		• Pupils will develop being able to justify.
		• Pupils will develop being able to create.
		
		Wonder
		• *I wonder how to find the volume of a shape without creating it with cubes.*
		• *I wonder how volume is linked to area.*
		
		Experiences & Provocations
		• Pupils will experience the curriculum by:
		  ○ White Rose.
		  ○ Nrich problems.
		  ○ CPA approach.
		
		Vocabulary - Tier 3 Subject Specific
		Cubed, area, cross-section, prism, cube, cuboid, face, length, height, width, depth

KS2 National Curriculum
Number – number and place value Pupils should be taught to: ▪ 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. Number – addition, subtraction, multiplication and division Pupils should be taught to: ▪ multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication ▪ divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context ▪ divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context ▪ perform mental calculations, including with mixed operations and large numbers ▪ identify common factors, common multiples and prime 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 division

- use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

Number – fractions, decimals and percentages

Pupils should be taught 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

11. multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$]
12. divide proper fractions by whole numbers [for example, $\frac{1}{3} \div 2 = \frac{1}{6}$]
13. associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $\frac{3}{8}$]

- identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places
- multiply one-digit numbers with up to two decimal places by whole numbers
- use written division methods in cases where the answer has up to two decimal places
- solve problems which require answers to be rounded to specified degrees of accuracy
- recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.

Ratio & Proportion

- solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts
- solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison
- solve problems involving similar shapes where the scale factor is known or can be found
- solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

Algebra

- use simple formulae
- generate and describe linear number sequences

- express missing number problems algebraically
- find pairs of numbers that satisfy an equation with two unknowns
- enumerate possibilities of combinations of two variables.

Measurement

Pupils should be taught to:

- solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate
- use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places
- convert between miles and kilometres
- recognise that shapes with the same areas can have different perimeters and vice versa
- recognise when it is possible to use formulae for area and volume of shapes
- calculate the area of parallelograms and triangles
- calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm^3) and cubic metres (m^3), and extending to other units [for example, mm^3 and km^3].

Geometry – properties of shapes

Pupils should be taught to:

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

Geometry – position and direction

Pupils should be taught to:

- describe positions on the full coordinate grid (all four quadrants)

- draw and translate simple shapes on the coordinate plane and reflect them in the axes.

Statistics

Pupils should be taught to:

- interpret and construct pie charts and line graphs and use these to solve problems
- calculate and interpret the mean as an average.

Year 6 Mathematics Curriculum		
Autumn Term	Spring Term	Summer Term
<u>Place Value</u> Core Knowledge • Pupils will know how to read and write numbers to 10 million • Pupils will know how to place numbers onto number lines • Pupils will know how to compare numbers • Pupils will know how to round numbers to the nearest 10, 100, 1000 and 10,000 • Pupils will understand the concept of negative numbers Hinterland Knowledge • Pupils will be able to read and write numbers to billion and beyond and consider contexts when they might be used	<u>Ratio</u> Core Knowledge • Pupils will understand language of ratio and associated symbols, • Pupils will understand that fractions and ratio are connected, • Pupils will know how to calculate ratios, • Pupils will know how to use scale factors. Hinterland Knowledge • Pupils will explore ratio in nature and in other settings Skills • Pupils will be able to write ratios using correct notation,	<u>Shape</u> Core Knowledge • Pupils will know how to measure using a protractor • Pupil will know how to draw and measure lines and angles • Pupils will know that angles on a straight line total 180° and that angles about a point total 360° • Pupils will know that vertically opposite angles are equal • Pupils will know that angles in a triangle total 180° • Pupils will know that angles in a quadrilateral total 360° and will know angle properties of special quadrilaterals

Skills
- Pupils will be able to write any number to 10 million in words or figures
- Pupils will be able to identify the value of any digit in a number to 10 million
- Pupils will be able to place numbers to 10 million on populated, partly populated number lines
- Pupils will be able to count forwards and backwards in different steps
- Pupils will be able to order numbers to 10 million
- Pupils will be able to round numbers to 10, 100 or 1000 backing up their answer using a number line
- Pupils will be able to explain the steps of their working and justify their answers
- Pupils will be able to use number lines when working with negative numbers

Wonder
- *I wonder why we use Base 10 to count?*

Experiences & Provocations
Pupils will experience the curriculum by:
- Being taught the White Rose New Primary scheme of Learning (Version 3.0)

- Pupils will apply their knowledge of equivalent fractions to help simplify ratios,
- Pupils will be able to find ratios in a variety of contexts,
- Pupils will be able to solve simple problems that involve direct proportion by scaling up or down,

Wonder
- *I wonder how ration and language of ratio is similar/different to the language used around fractions…*

Experiences & Provocations
Pupils will experience the curriculum by:
- Being taught the White Rose New Primary scheme of Learning (Version 3.0)
- Practising core skills which will build both confidence and fluency,
- Reasoning both in their written work and also during whole class discussion e.g. reasoning about why a method works/does not work, why an answer is clearly wrong, where a method has broken down, when working systematically to find all possible answers

- Pupils will know angle properties of regular polygons
- Pupils will know how to draw accurately some 2D shapes given line and angle information
- Pupils will know how to construct simple nets e.g. cube, cuboid

Hinterland knowledge
- Pupils will be able to construct geometrical patterns using compasses and ruler,
- Pupils will be able to explain similarities and differences between types of triangle, and types of quadrilateral
- Pupils will have the knowledge to solve increasingly complex problems that involve shape
- Pupils will know that regular polygons have lines of symmetry equal to the number of sides

Skills
- Pupils will be able to measure using a protractor
- Pupil will be able to draw and measure lines and angles
- Pupils will be able to calculate missing angles using knowledge that angles on a straight line

- Practising core skills which will build both confidence and fluency,
- Reasoning both in their written work and also during whole class discussion e.g. reasoning about why a method works/does not work, why an answer is clearly wrong, where a method has broken down, when working systematically to find all possible answers
- Applying knowledge acquired to solve problems in an ever increasing range of contexts

Vocabulary - Tier 3 Subject Specific
Compare, figure, hundred, numeral, thousand, ten-thousand, hundred-thousand, million, ascending, descending, powers of ten

<u>Calculations</u>

Core Knowledge
- Pupils will know how to find multiples and factors, common multiples and common factors
- Pupils will know what prime numbers are and identify primes less than 100
- Pupils will be able to recall the primes to 20

- Applying knowledge acquired to solve problems in an ever-increasing range of contexts

Vocabulary - Tier 3 Subject Specific
Ratio, proportion, simplify, scale factor

<u>Algebra</u>

Core Knowledge
- Pupils will understand some basic elements of algebra notation,
- Pupils will know how to find a rule using one or two steps,
- Pupils will understand what expressions, equations and formulae are,
- Pupils will know how to form expressions,
- Pupils will know how to solve equations by applying knowledge and understanding of the equals sign

Hinterland knowledge
- Pupils will be able to make connections between basic algebra notation and using this

total 180°, that angles about a point total 360°, and that vertically opposite angles are equal
- Pupils will be able to calculate missing angles using knowledge that angles in a triangle total 180° and that angles in a quadrilateral total 360° and will know angle properties of special quadrilaterals
- Pupils be able to calculate missing angles using knowledge of angle properties of regular polygons
- Pupils will be able to draw accurately some 2D shapes given line and angle information
- Pupils will be able to construct simple nets e.g. cube, cuboid

Wonder
- *I wonder why angles inside a triangle always total 180°…..inside a quadrilateral always total 360°…*
- *I wonder how 2D shapes have the names that they do*
- *I wonder who some cube nets work (i.e. can be cut and made into a cube) but others do not*

Experiences & Provocations
Pupils will experience the curriculum by:

- Pupils will know what is meant by square number and cube number
- Pupils will be able to recall the squares to 12 squared and cubes to 5 cubed
- Pupils will know how to multiply and divide 4-digit numbers by 2-digit numbers, including with remainders for division
- Pupils will know how to use factors to make division easier
- Pupils will be able to solve problems, including multi-step problems, using multiplication and division

Hinterland knowledge

- Pupils will be able to represent remainders in different ways, for example as decimals or fractions
- Pupils will be able to use rules of divisibility to identify bigger prime numbers
- Pupils will be able to find bigger squares and cubes

Skills

- Pupils will be fluent in all times table facts,
- Pupils will be fluent in skills of column addition and subtraction,
- Pupils will be able to find multiples of numbers and recognise when a number is or

notation to describe rules, pattern in a more efficient way e.g. area of a rectangle

Skills

- Pupils will be able to recall, for example, that a x b is written as ab, 3 x c is written as 3c and a x a is written as a^2,
- Pupils will recall the definitions of expressions, equations and formulae and recall the differences between them,
- Pupils will be able to form expressions in a variety of contexts,
- Pupils will be able to solve simple 1-step and 2-step equations

Wonder

- *I wonder how the language of algebra evolved…*

Experiences & Provocations

Pupils will experience the curriculum by:

- Being taught the White Rose New Primary scheme of Learning (Version 3.0)
- Practising core skills which will build both confidence and fluency,
- Reasoning both in their written work and also during whole class discussion e.g. reasoning about why a method works/does not work, why an answer is clearly wrong,

- Being taught the White Rose New Primary scheme of Learning (Version 3.0)
- Practising core skills which will build both confidence and fluency,
- Reasoning both in their written work and also during whole class discussion e.g. reasoning about why a method works/does not work, why an answer is clearly wrong, where a method has broken down, when working systematically to find all possible answers
- Applying knowledge acquired to solve problems in an ever-increasing range of contexts

Vocabulary - Tier 3 Subject Specific

Triangle, isosceles triangles, equilateral triangle, quadrilateral, square, rectangle, kite, parallelogram, rhombus, pentagon, hexagon, heptagon, octagon, decagon, polygon, vertically opposite, acute, obtuse, reflex, tetrahedron, cube, cuboid, pyramid, prism

<u>Position & Direction</u>

Core Knowledge

- Pupils will know how to plot and read coordinates in all 4 quadrants

is not a multiple of numbers to 12 as well as numbers like 20, 25, 50, 100 and 1000 • Pupils will be able to find factor pairs and use these to list all factors in ascending order • Pupils will apply knowledge of the above to find common multiples and common factors • Pupils will be able to identify primes less than 100 by testing for divisibility • Pupils will recall the primes to 20 • Pupils will recall the squares to 12 squared and cubes to 5 cubed • Pupils will multiply and divide 4-digit numbers by 2-digit numbers, including with remainders for division • Pupils will use factors to make division easier • Pupils will be able to solve problems, including multi-step problems, using multiplication and division Wonder • *I wonder why it is not always the case that you can place or remove zeros when multiplying and dividing by 10, 100 or 1000* • *I wonder why 2 is the only even prime,* • *I wonder if every number has 1 as a factor,* • *I wonder if the different methods of long multiplication are somehow connected*	where a method has broken down, when working systematically to find all possible answers • Applying knowledge acquired to solve problems in an ever-increasing range of contexts Vocabulary - Tier 3 Subject Specific Term, Expression, equation, formula, substitute, linear number sequence, symbol, known values, variables <u>Decimals</u> Core Knowledge • Pupils will understand decimal notation to 3 decimal places, • Pupils will know how to multiply and divide decimals by 10, 100 and 1000, • Pupils will know how to multiply and divide decimals up to 3 decimal places by integers, • Pupils will know how to convert between decimals and fractions Skills	• Pupils will know how to translate 2D shapes, • Pupils will know how to reflect 2D shapes, • Pupils will know how to describe translations and reflections Hinterland knowledge • Pupils will have the knowledge to solve increasingly complex problems that involve position and direction Skills • Pupils will be able to plot and read coordinates in all 4 quadrants • Pupils will be able to translate 2D shapes, • Pupils will be able to reflect 2D shapes, • Pupils will be able to describe translations and reflections Wonder • *I wonder what happens to the coordinates of shapes when they are reflected in the x or y axis?* Experiences & Provocations Pupils will experience the curriculum by: • Being taught the White Rose New Primary scheme of Learning (Version 3.0) • Practising core skills which will build both confidence and fluency,

Experiences & Provocations Pupils will experience the curriculum by: • Being taught the White Rose New Primary scheme of Learning (Version 3.0) • Practising core skills which will build both confidence and fluency, • Reasoning both in their written work and also during whole class discussion e.g. reasoning about why a method works/does not work, why an answer is clearly wrong, where a method has broken down, when working systematically to find all possible answers • Applying knowledge acquired to solve problems in an ever increasing range of contexts Vocabulary - Tier 3 Subject Specific Prime, square, square number, cube, cube number, multiple, factor, prime factor, common factor, common multiple, divisibility, product , order of operations <u>Fractions</u> Core Knowledge - fractions • Pupils will know how to simplify fractions	• Pupils will be able to write any decimal to 3 decimal places, • Pupils will be able to apply knowledge of how to multiply and divide decimals by 10, 100 and 1000 with whole numbers to do the same with decimals, • Pupils will be able to multiply and divide decimals up to 3 decimal places by integers, • Pupils will be able to convert between decimals and fractions, applying knowledge of equivalent fractions as appropriate Wonder • *I wonder why some decimal fractions recur and why others terminate…* Experiences & provocations Pupils will experience the curriculum by: • Being taught the White Rose New Primary scheme of Learning (Version 3.0) • Practising core skills which will build both confidence and fluency, • Reasoning both in their written work and also during whole class discussion e.g. reasoning about why a method works/does not work, why an answer is clearly wrong, where a method has broken down, when	• Reasoning both in their written work and also during whole class discussion e.g. reasoning about why a method works/does not work, why an answer is clearly wrong, where a method has broken down, when working systematically to find all possible answers • Applying knowledge acquired to solve problems in an ever-increasing range of contexts Vocabulary - Tier 3 Subject Specific Quadrants, north, south, east west, negative, minus, translate, rotate, anti-clockwise, clockwise, reflect, mirror, plot, axes, axis, point, grid reference, vertex, vertices,

• Pupils will know how to find equivalent fractions • Pupils will know how to compare and order fractions • Pupils know how to add and subtract fractions with different denominators, and mixed numbers • Pupils will know how to multiply and divide fractions by integers • Pupils will know how to multiply a fraction by a fraction • Pupils will know how to find a fraction of an amount Skills • Pupils will simplify fractions by applying knowledge of common factors, • Pupils will find equivalent fractions by applying knowledge of common factors and scaling up or down, • Pupils will compare and order fractions by finding common denominators, • Pupils will add and subtract fractions with different denominators by finding common denominators, • Pupils will add and subtract mixed numbers by first converting to improper fractions,	working systematically to find all possible answers • Applying knowledge acquired to solve problems in an ever increasing range of contexts Vocabulary - Tier 3 Subject Specific Tenth, hundredth, thousandth, place value, degree of accuracy <u>Fractions, Decimals, Percentages</u> Core Knowledge & Understanding • Pupils will understand percentages and that per cent means out of 100, • Pupils will know how to convert between FDP and will understand that this can help to order a set of FDPs, • Pupils will know how to find a percentage of an amount Hinterland knowledge • Pupils will be able to convert fractions to decimals using written methods of division • Pupils will apply knowledge of percentages of an amount to calculate percentage increase and decrease Skills	

• Pupils will multiply and divide fractions by integers, at first by using visual representations, • Pupils will know how to multiply a fraction by a fraction, at first by using visual representations, • Pupils will know how to find a fraction of an amount, at first by using bar modelling Wonder • I wonder why the answer gets smaller when multiplying by a fraction Experiences & Provocations Pupils will experience the curriculum by: • Being taught the White Rose New Primary scheme of Learning (Version 3.0) • Practising core skills which will build both confidence and fluency, • Reasoning both in their written work and also during whole class discussion e.g. reasoning about why a method works/does not work, why an answer is clearly wrong, where a method has broken down, when working systematically to find all possible answers	• Pupils will recall that per cent means out of 100, • Pupils will be able to convert between FDP and will understand that this can help to order a set of FDPs, • Pupils will recall FDP equivalences for half, quarter, three-quarters, fifth, tenth and hundredth, • Pupils will recall that to find 10% is the same as finding a tenth so you divide by 10, • Pupils will use bar models to find a percentage of an amount Wonder • I wonder when decimals and percentages first began to be used Experiences & Provocations Pupils will experience the curriculum by: • Being taught the White Rose New Primary scheme of Learning (Version 3.0) • Practising core skills which will build both confidence and fluency, • Reasoning both in their written work and also during whole class discussion e.g. reasoning about why a method works/does not work, why an answer is clearly wrong, where a method has broken down, when	

• Applying knowledge acquired to solve problems in an ever-increasing range of contexts Vocabulary - Tier 3 Subject Specific Numerator, denominator, equivalence, lowest common denominator, bar model, simplify, cancel, lowest terms <u>Converting units</u> Core Knowledge • Pupils will know standard metric units of length, mass, volume and capacity, and their abbreviations • Pupils will be able to convert between standard metric units • Pupils will know the relationship between miles and kilometres • Pupils will be able to convert between miles and kilometres • Pupils will know some imperial units of length, mass, volume and capacity • Pupils will be able to convert between some imperial and metric units of measurement Hinterland knowledge	working systematically to find all possible answers • Applying knowledge acquired to solve problems in an ever-increasing range of contexts Vocabulary - Tier 3 Subject Specific Per cent, percentage of amount, equivalence <u>Area, perimeter & volume</u> Core Knowledge • Pupils will understand perimeter, area and volume and will know standard units of measurement for each, • Pupils will understand how to find areas of triangles and parallelograms, • Pupils will understand how to find volume of cubes and cuboids Hinterland knowledge • Pupils will be able to make connections in their work on area and volume with work covered earlier in the year on factors, square numbers and cube numbers Skills	

• Pupils will learn about the historical roots of names given to imperial units Skills • Pupils will be able to convert between standard metric units by applying knowledge of multiplying and dividing by 10, 100 and 1000, • Pupils will convert between miles and kilometres by first recalling the relationship between the two, • Pupils will be able to convert between some imperial and metric units of measurement by first recalling relationships between them Wonder • I wonder why some countries still use imperial measures and others don't • I wonder how imperial measures have got their names • I wonder why metric units always involve powers of 10 (i.e. 10, 100 or 1000) Experiences & Provocations Pupils will experience the curriculum by: • Being taught the White Rose New Primary scheme of Learning (Version 3.0)	• Pupils will recall definitions of perimeter, area and volume and standard units of measurement for each, • Pupils will be able to find areas of triangles and parallelograms, • Pupils will be able to find volume of cubes and cuboids Wonder • I wonder why the area of a triangle is half the area of a rectangle Experiences & provocations Pupils will experience the curriculum by: • Being taught the White Rose New Primary scheme of Learning (Version 3.0) • Practising core skills which will build both confidence and fluency, • Reasoning both in their written work and also during whole class discussion e.g. reasoning about why a method works/does not work, why an answer is clearly wrong, where a method has broken down, when working systematically to find all possible answers	

• Practising core skills which will build both confidence and fluency, • Reasoning both in their written work and also during whole class discussion e.g. reasoning about why a method works/does not work, why an answer is clearly wrong, where a method has broken down, when working systematically to find all possible answers • Applying knowledge acquired to solve problems in an ever-increasing range of contexts Vocabulary - Tier 3 Subject Specific Millimetre, centimetre, metre, kilometre, millilitre, litre, gram, kilogram, ton, inch, foot, yard, mile, pint, ounce, pound, length, mass, weight, capacity, metric, imperial	• Applying knowledge acquired to solve problems in an ever-increasing range of contexts Vocabulary - Tier 3 Subject Specific Area, perimeter, volume, height, length, depth, width <u>Statistics</u> Core Knowledge • Pupils will know how to draw and interpret line graphs, • Pupils will know how to draw and interpret pie charts, • Pupils will understand the mean average, • Pupils will know how to find the mean average Skills • Pupils will be able to draw and interpret line graphs, • Pupils will be able to draw and interpret pie charts, • Pupils will be able to find the mean average	

	Wonder • I wonder whether a mean average always gives us a realistic picture Experiences & Provocations Pupils will experience the curriculum by: • Being taught the White Rose New Primary scheme of Learning (Version 3.0) • Practising core skills which will build both confidence and fluency, • Reasoning both in their written work and also during whole class discussion e.g. reasoning about why a method works/does not work, why an answer is clearly wrong, where a method has broken down, when working systematically to find all possible answers • Applying knowledge acquired to solve problems in an ever-increasing range of contexts Vocabulary - Tier 3 Subject Specific Mean, pie chart, x-axis, y-axis, axes,	